AIR SEA RESCUE Bulletin

VK
1300
.A2

RESTRICTED

Vol. II, No. 4
DECEMBER, 1945



Information contained herein is assembled from various United States and foreign sources; it is disseminated in this Bulletin for information only to a limited list of addressees with interest in the field of air-sea rescue. It will be apparent that the Bulletin may contain information which does not represent the policy of the Air Sea Rescue Agency or the Services represented on the Board for Air Sea Rescue.

Published monthly by the United States Coast Guard for

AIR SEA RESCUE AGENCY

NAVCG 128

WASHINGTON, D. C.

Digitized by Google
Original from
UNIVERSITY OF MICHIGAN

AIR SEA RESCUE AGENCY

R. R. WAESCHE, Admiral
U. S. CoastGuard

ROBERT DONOHUE. Rear Admiral
U. S. Coast Guard

BOARD FOR AIR SEA RESCUE

D. H. MAURY, *Colonel*, U. S. Army Air Forces
J. W. BURGARD, *Colonel*, U. S. Army Air Forces
Temporary Vacancy, U. S. Army Service Forces
FELIX BAKER, *Captain*, U. S. Navy
JOSEPH RUNYON, *Commander*, U. S. N. R.

Executive Staff for Air Sea Rescue

W. B. SCHEIBEL, *Commander*, USCG, Executive Assistant
A. W. WUERKER, *Lieut. Commander*. USCG, Secretary of the Board
R. E. FOWLER, *Lieut. Commander*, USCGR, Chief of Literature Section

Special Duty Staff Officers, Air Sea Rescue Agency

C. M. MURPHY, *Major*, AC, Army of United States
E. J. SANGER, *Lieutenant*, USNR

AIR SEA RESCUE LIAISON OFFICERS

R. L. BURKE, *Captain*, USCG
Air Sea Rescue Liaison Officer
Commander Eastern Sea Frontier
90 Church Street
New York 7, N. Y.

T. J. HARRIS, *Commander*, USCG
Air Sea Rescue Liaison Officer
% Commander Western Sea Frontier
Federal Office Building, Room 469
San Francisco 2, Calif.

A. E. HARNED, *Commander*, USCG
Air Sea Rescue Liaison Officer
% Commander
Philippine Sea Frontier
Fleet Post Office
San Francisco, Calif.

A. J. DEJOY, *Commander*, USCG
Air Sea Rescue Liaison Officer
Com Fleet Air Wing—18
% Fleet Post Office
San Francisco, Calif.

R A. BAXTER, *Commander*, USCG
Air Sea Rescue Liaison Officer
% Commander Gulf Sea Frontier
Dupont Building, Room 936
Miami, Fla.

D. O. REED, *Commander*, USCG
Air Sea Rescue Liaison Officer
Coast Guard Box #1, Navy 48
% Fleet Post Office
San Francisco, Calif.

O. D. WEED JR., *Commander*, USCG
Air Sea Rescue Liaison Officer
% Commander, Alaskan Sea Frontier
Fleet Post Office
Seattle, Wash.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

CONTENTS

	Page
Rickenbacker Urges Air-Sea Rescue Expansion	2
Oceanic Air Traffic Control and Air-Sea Rescue	4
AVR on Test Run Effects Rescue	11
Ditching of the Hawaii Mars	12
Blimps Are Working Members of Air-Sea Rescue Team	15
U. S. Forest Service Assists in Land Rescue Operations	20
A Résumé of the Bouyage System of the United States	24
Navy TNs Tell How to Rig and Operate the AR–8 Lifeboat	26
Navy Aviation Circular Letters	29
Instructions Outlined for Handling Life Rafts in Surf	30
Aerial Photography in Search, RCAF	32
Medical Supplies for ASR Aircraft and Boats	36
Canadian PBY Makes Open-Sea Rescue	37
Rain Repellent and Antifogging Compound	38
Distress Procedure, Ready Reference Pamphlet	40
Land Survival Training in RCAF	41
Advice on Chuting Into Water	42
Patches Cut Life Jacket Wear	42
Desalting Kits Checked	42
Effect of Sunlight on Night Vision Studied	43
TO Directs AR–10 Repacking Procedure	43
AAF Board Tests Use of Radar With Corner Reflector	44
"It Can't Happen To Me"	45
Navy Advocates Organized Abandon Plane Procedure	46
Resourcefulness Employed in Signaling Surface Craft	46
NAS, Norfolk, Constructs Survival Museum	47
Rescue Sense, Book Review	48

This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, 50 U. S. C., 31 and 32, as amended. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

Communications to Air Sea Rescue Bulletin should be addressed:

AIR SEA RESCUE BULLETIN

Air Sea Rescue Agency

1516 Fourteenth Street N.W.

Washington 5, D. C.

669762—45— 1

Digitized by Google

Original from UNIVERSITY OF MICHIGAN



Capt. Eddie Rickenbacker, charter member of the Sea Squatter Club, an organization of men who have "sat it out" in life rafts after landings in the sea, autographs membership cards of Sea Squatter Capt. Lee D. Seemann, USAAF; Maj. John Fitting, jr., USMCR; Capt. Herman K. Freeman, USAAF, and AOM2/c Douglas C. Paterson, USNR. (Photo Courtesy Walter Kidde and Co.)

RICKENBACKER URGES AIR-SEA RESCUE EXPANSION

This article has been prepared especially for the AIR SEA RESCUE BULLETIN by Capt. Eddie Rickenbacker, president of Eastern Airlines. Captain Rickenbacker speaks with authority and strong feeling about air-sea rescue through his personal experience and background.

Air-sea rescue today provides living proof—if proof is necessary—of the value of joint effort. It is doubtful that the war can offer any finer example of progressive results than this saga of cooperation between the military services, to the end that our airmen, forced down on land or sea, might live to fight again.

Born of war, its record of lives saved is an amazing tribute to its organized efficiency. Its record of progress and development offers hopeful promise for the future, not only as an integral adjunct of Army-Navy operations, but as an important peacetime safety factor for the commercial air carriers of this and other nations.

The story of my own experience as a survivor would have been stripped of much of its aura of stark tragedy had it occurred a year later than it did. Perhaps then, instead of "seven came through," it would have been eight. We would not have known thirst. The drinking-water kit which converts salt water into fresh water in a matter of minutes, or the solar still, which uses the energy of the sun to produce more than a pint of fresh water a day, would have obviated that. We would not have experienced the terrible hunger had we possessed the compact, concentrated food kits with which every rubber life raft is equipped today. Nor would we have suffered the exhaustive drain on our physical strength had our raft contained some of the antiexposure equipment carried at present.

We would not have felt the terrifying mental anguish caused by the fear of "when" or "how long" if we had known, as every airmen knows today, that rescue would be but a matter of minutes—or hours at most—instead of

Digitized by Google

Original from UNIVERSITY OF MICHIGAN

days and weeks as it was with us . . . had we the peace of mind engendered by the knowledge of the intricate and efficient operational pattern of planes, ships and men, radio, radar and all the rest, which comprise air-sea rescue today. And added to these, the knowledge that when rescue did come it would find us fit, that all we had to do was to keep cool and virtually "sit it out" for a brief spell in comparative comfort.

When I speak of comparative comfort, let me briefly recite one of the classical fact stories of air-sea rescue which took place in the fall of 1944 in the China Sea. A young Navy commander, flying an F6F Navy fighter from a carrier, had his single engine shot away and was forced to ditch. Weighing 145 pounds when he took to his completely equipped rubber raft, he promptly set sail for Australia. Eleven days later, he was sighted by an American submarine which cautiously came alongside. The submen had to wake him out of sound slumber, took him aboard none the worse for wear, and still weighing 145 pounds!

Let's take a moment to compare the combined equipment carried by our three rubber rafts with that contained in a single raft of similar size carried by the same type plane today. I may have forgotten an item or two, but these were our total possessions: a small first-aid kit, 18 flares and 1 Very pistol for firing them, 2 hand pumps for both bailing and renewing the air in the rafts, 2 service sheath knives, a pair of pliers, a small pocket compass, 2 collapsible rubber bailing buckets, 3 sets of patching gear (one for each raft), several pencils and my map of the Pacific.

In comparison, the Type E-2A raft, which is 12 feet long with a 5-foot 8-inch beam, carries this impressive list of equipment: 3 aluminum oars; hand pump; sea anchor, police whistle and bailing bucket; compass; 40 feet of 75-pound test line; repair kit containing plugs, sandpaper, rubber cement, patching material, pliers and scissors; pyrotechnic projector, 6 distress signals; 2 cans of drinking water; 3 sea markers; 7 units of rations; flashlight; knife, first-aid and a fishing kit; sail paulin; paulin for water catching, signal, shade and camouflage; sunburn ointment; emergency signaling mirror; set of religious booklets; 10 water-desalting kits; 4 water storage containers; sponge for bailing; 5 navigation charts, and an emergency signaling kit. Survival deluxe, and furthermore, the plane also carries this additional floatable equipment for use in conjunction with the raft: a Gibson Girl portable radio transmitter; the Mae West pneumatic life vest to which is attached dye markers, shark chaser, floating light, hand distress signal, mirror, whistle, and, where climate dictates, cold weather exposure suits.

What has all this to do with the peacetime operation of commercial air carriers? The answer should be obvious. I have heard it said by people who should know better that too much emphasis on safety makes air travel more difficult to "sell." Did you ever hear of a prospective sea voyager changing his mind about making a trip on a luxury liner, simply because the vessel was completely equipped with motorized lifeboats, and that each of those lifeboats carried a comprehensive array of signaling equipment, clothing, drinking water, and food? If such a personality exists, you can be fairly certain he would never be a very good air travel prospect anyway.

We who operate this nation's vast commercial air carrier systems are practical realists. We had to be to operate successfully and to achieve the almost unbelievable safety record which these carrier systems enjoy today. That safety record was not achieved by burying our heads in the sands; we achieved it by squarely facing the fact that to be a profitably operated system, it had to be a safely operated one. I, for one, putting myself in the place of the prospective air traveler, would promptly dismiss any remaining fears I might have of transoceanic flight if I were convinced that if the plane were forced down at sea, my chances for survival were 99 per cent intead of 10.

If it were possible to place a duplicate of an exhibit which is on display in the building of the coordinated Air Sea Rescue Agency in Washington, D. C., in all the large cities throughout the country, such exhibits would help eliminate all fear of transoceanic air travel.

The Air Sea Rescue Agency exhibit is a convincing visual picturization of the advances which have taken place in the science of air-sea rescue. Duplicate exhibits would be the most convincing proof which could be offered to any prospective client that the final factor of safety in flight is being signed, sealed, and delivered, that the progressive, imaginative application of the skill and inventive genius of our military and industrial scientists and engineers are fast removing one of the last remaining gambles.

Air-sea rescue is an accomplished fact. It is a going concern—with the "know how" of research and development, of organization and operating technique, of men and equipment—to be of tremendous value to the nation as an expanded peacetime activity. Certainly it is to be hoped that the invaluable contribution of air-sea rescue to safety in flight, and its possibilities for adaptation to the needs of the Nation's commercial air carriers, will not be lost or disbanded in this era of revision and reduction.

Granted that air-sea rescue is a military child and, as usual, the military services did an excellent job of it, there is definite need for its continuance and a free hand for its expansion and development, to the end that the final "if" factor in flight safety—that of rescue and survival—be further removed from the "if" status to one of practical certainty.

Army Tests Hemispherical Sea Anchor

In an effort to develop a sea anchor for rafts with greater "holding power," the Army has devised and tested a hemispherical nylon pouch. This new sea anchor has been tested by the AAF Proving Ground Command at Eglin Field, Fla., and has been found highly satisfactory. It is understood now to be in the stages leading toward procurement as a standard item for the AAF.

The anchor found most suitable in the tests was made of mottled green nylon, weighted with a piece of lead. White nylon life lines were used to secure it to the raft. In every case this pouch, 23½ inches in diameter, had a greater drag than the standard rubberized truncated cone with which it was compared. Other points in its favor are that the hemispherical sea anchor requires less packing space than the one now used, and it is strong and durable.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

OCEANIC AIR TRAFFIC CONTROL AND AIR-SEA RESCUE

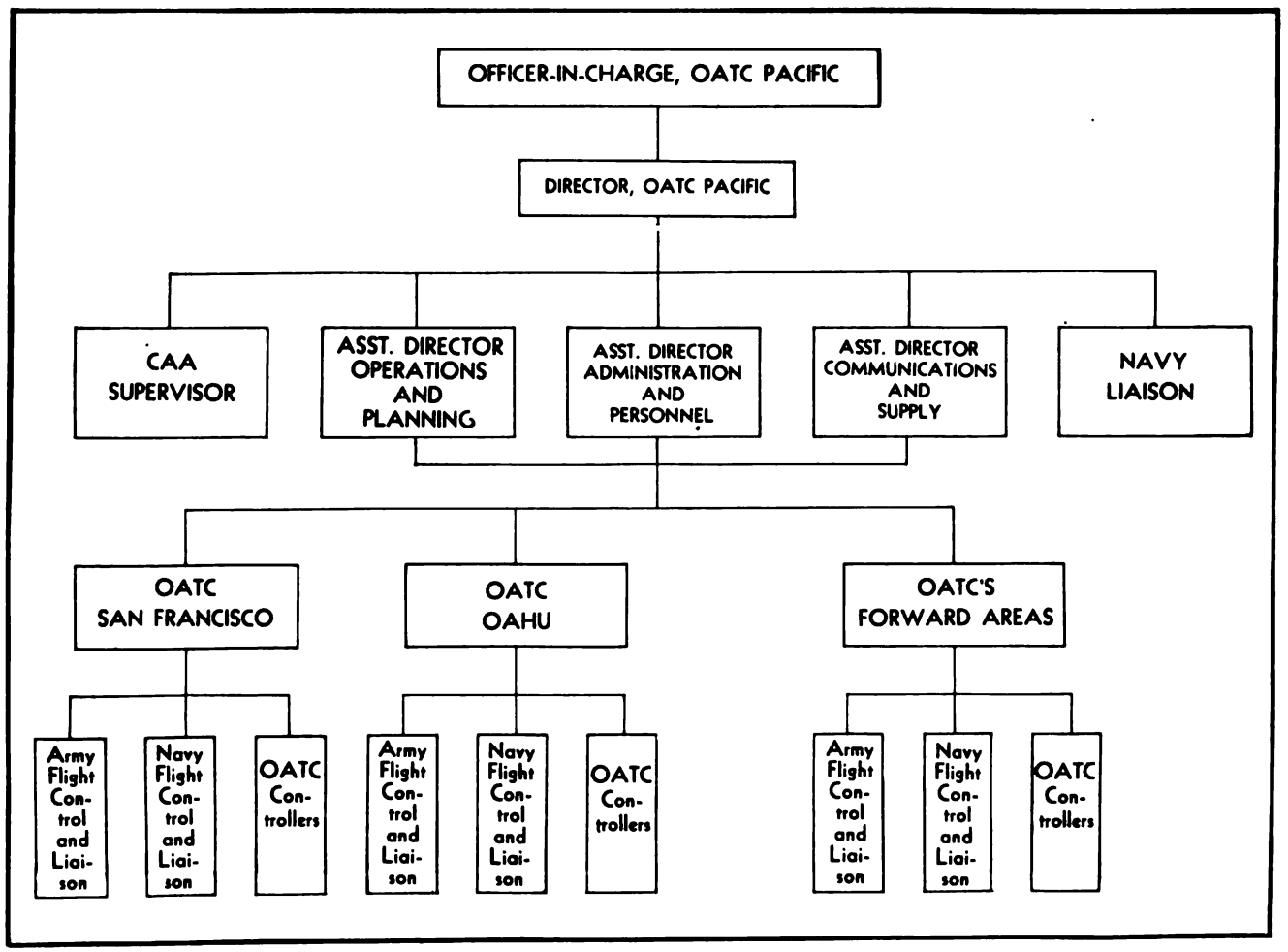
This article describes the meaning of Oceanic Air Traffic Control and points out its direct relation to the safety of aircraft and to air-sea rescue. Divided into three parts, the first section is devoted to a description of the responsibilities and organization of an OATC center; the second section describes OATC emergency procedure, using an actual case history; the third section comprises reprints of charts which show the authorized and proposed air carrier transoceanic routes.

OATC Organization and Responsibilities

The basic material for this section was taken from an address by Maj. J. M. Sharpe, Air Corps, U. S. Army, in March 1945, in which were reviewed the principles of organization, chain of command, responsibility, air-sea rescue, OATC contributions, and the trans-Pacific airways system.

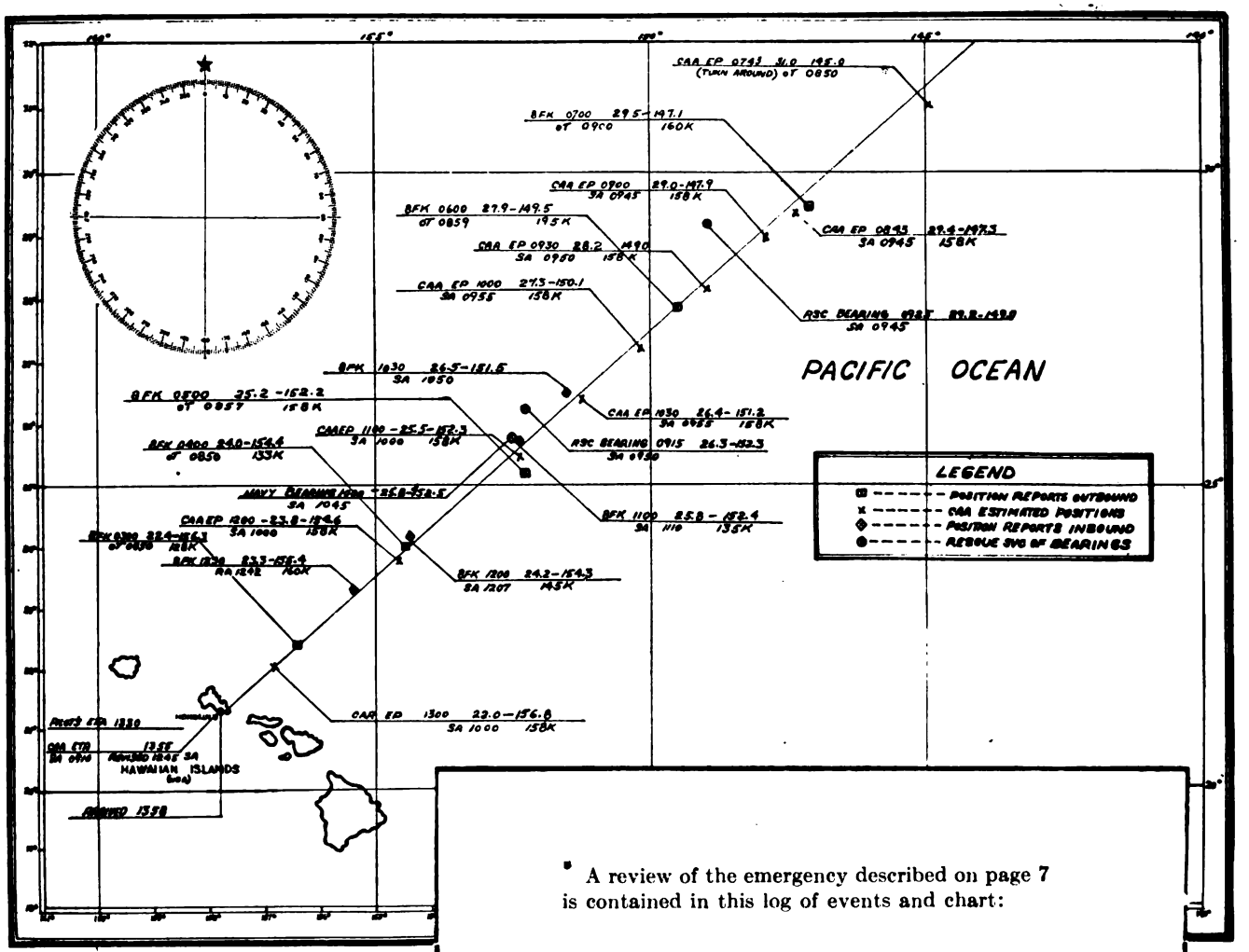
It is an inherent function of OATC to provide for the safety of aircraft on transoceanic flights, and in this lies its definite relationship to air-sea rescue.

It is obvious that in the event of an emergency in flight, OATC centers are in a position to render effective aid because of their established facilities and their accurate knowledge of the position of aircraft and surface vessels in the area of the emergency. Direct private lines connect each OATC center with the evaluation center of DF systems from which bearings are promptly available, thus providing the basis for determining a fix to aid aircraft which are not proceeding on course, or for coordination in the event a search is necessary. In this respect, when an aircraft is known to be down or has exhausted its reserve fuel and failed to reach its destination, the air-sea rescue center for the area takes over all activities in relation to the coordination, supervision



A typical Oceanic Air Traffic Control organization.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN



and execution of search procedures.

OATC centers were established in San Francisco and Oahu in September, 1943, at the request of the commander-in-chief, Pacific Ocean area, in order to provide a higher degree of safety for trans-Pacific flights between the mainland and the Hawaiian Islands. The commanding general, Pacific Division (then the Pacific Wing), was selected to be the officer-in-charge of OATC, and to establish and supervise its operation.

Reference to the chart on the bottom of opposite page will explain the chain of command provided for these OATC centers. Because his duties as officer-in-charge, OATC, Pacific, may be described as being additional duty, it is not necessary for him to go through Army Headquarters channels in matters relating to air traffic control. He reports direct to CincPoa.

(Continued on next page)

A review of the emergency described on page 7 is contained in this log of events and chart:

C87 Hickham to Hamilton departed 0214, altitude 9,500, track 35-140

0840 From C87: Turned around at 0743, lost No. 2 engine, request permit to come straight in.

Estimated aircraft position: 31.0N-145.0W. Time in flight: 5 hours and 29 minutes.

0841 Aircraft instructed to maintain 8,500 altitude, send MOs 10 minutes on, 10 minutes off. (AFCO)

0857 From C87: Can maintain altitude, No. 2 engine, QAA1330Z.

0905 From C87: Can't gain altitude to 8,500, have to stay at 6,500. When do you want first MOs INT and for how long INT?

909 Aircraft instructed to QFM 6,500. (Instructions for MO schedule arranged for by AFCO.)

9. C AA ETA 1348.

0915 Sea rescue bearing: 26.20N-152.-15W.

0925 Sea rescue bearing: 29.2N-149.0W.

1000 Navy bearing: 25.45N-152.30W.

1009 Sea rescue advised aircraft to fly course 232 degrees true.

1010 Aircraft instructed to discontinue MOs. (AFCO)

1030 From C87: position—26.30N-151.-30W.

1100 From C87: position—25.8N-152.-4W.

1200 From C87: position—24.2N-154.-3W.

1230 From C87: position—23.3N-155.4-W.

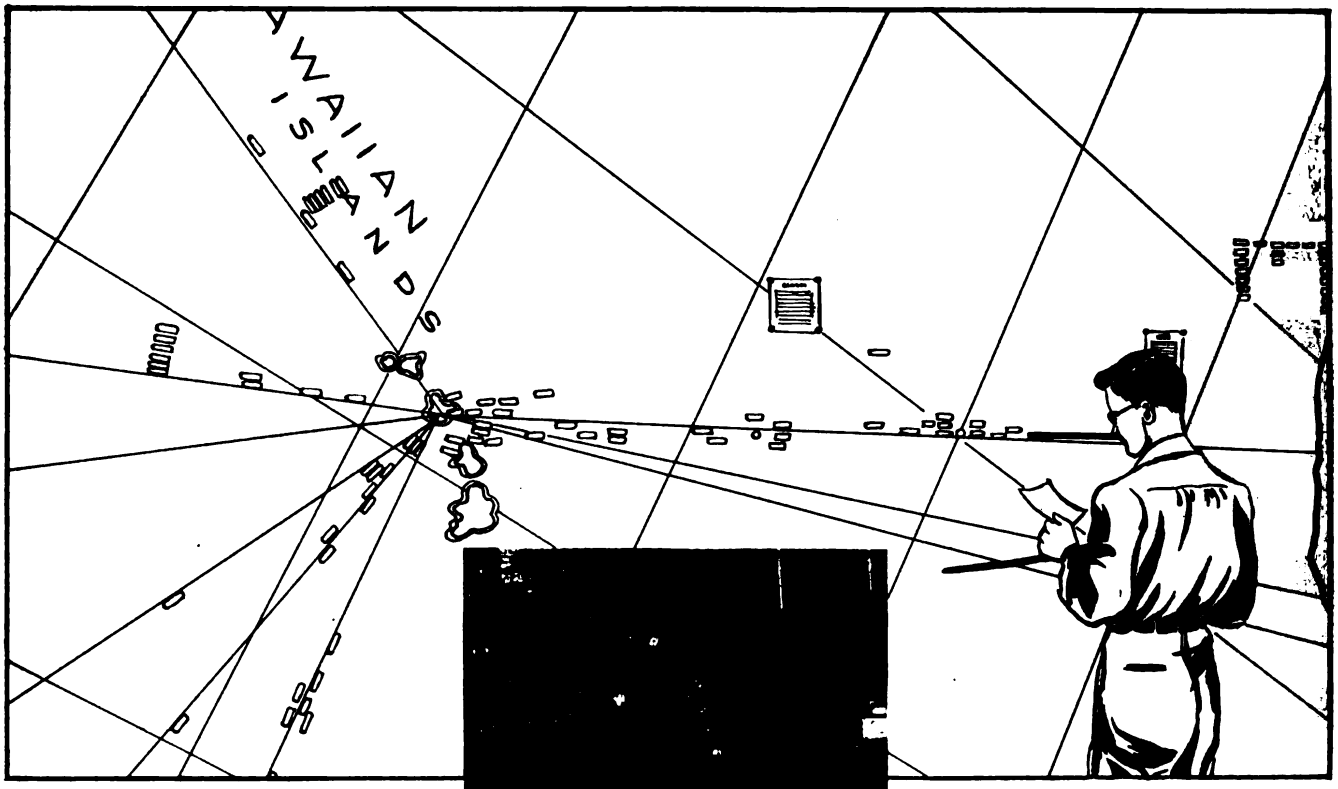
1245 CAA ETA (revised) 1355.

1255 From C87: via HZ radio—QAA 1340.

1305 Lizard advised aircraft approximately 130 miles out.

1358 C87 arrived Hickam Field. Time in flight: 11 hours, 44 minutes.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN



This drawing, from an original photograph, illustrates the steel "plotting map," with all routes marked. The markers are small magnets which can be placed easily on the map and moved as necessary.

Inset: Air Traffic Control. Complete written details on each flight for ready reference of controllers make this the nerve center of traffic control.

The director is the representative of the officer-in-charge, OATC, Pacific, and with the assistant directors in charge of operations and planning, administration and procedure, and communications and supply, activates the formulation and execution of new procedures and supervises the activities of each center.

The Civil Aeronautics Authority has cooperated closely with OATC since its inception and has made many valuable contributions to the formulation of effective air traffic control procedures throughout the Pacific area.

Experienced men from the CAA's domestic traffic control centers were selected and provided by the CAA to act as chief and senior controllers in OATC centers. The CAA supervisor, indicated on the chart, travels between the various centers inspecting methods of procedure in the interest of coordination and standardization, submitting reports of his findings and recommendations to the director.

As the chart indicates, officers in charge of centers are directly responsible to the Director, OATC, Pacific, for the operation and administration of their respective commands. Although OATC personnel are attached to Headquarters, Pacific Division, ATC, they are assigned, for duty and administrative purposes only, to the respective AAF base units.

The principal responsibilities of OATC are twofold: (1) to provide for the proper separation of trans-Pacific flights en route, and (2) to issue priorities for arrivals and departures under instrument flight conditions.

En route separation.—To provide for proper traffic separation, altitude levels and time-between-flights are the prime factors to be considered in carrying out these functions effectively and, in order to maintain an accurate, progressive picture of the progress of each aircraft for transmission to trans-Pacific operations, considerable flight data is necessary.

Operational control.—The operational control of all aircraft cleared by OATC remains the responsibility of the operating agencies. OATC centers are, of course, authorized to change the altitude of aircraft en route if danger of collision exists, but no other operational messages are dispatched to the aircraft unless specifically requested by the operating agency.

The contribution of OATC to the standardization of operating practices between Army and Navy has been considerable. It has assisted in the development of new and more efficient operating procedures. For instance, the OATC plan for reporting positions transmits the information to the center within 6 minutes of the time the aircraft reports its position. The transmissions of point-to-point operational messages have been speeded greatly by the installation of advanced types of radio teletype equipment. The establishment of aircraft station vessels be-

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

tween the mainland and Oahu, from which aircraft can safely navigate by means of radio aids, was sponsored by OATC.

Reference to below chart of the trans-Pacific military airways system will show that a main trans-Pacific airway has been established. This airway provides the most practical means for securing the necessary separations between both transport and tactical aircraft. Few persons realize the tremendous increase in the number of trans-Pacific flights. Records show that the Honolulu center in 1944 handled 30,887 trans-Pacific flights, not including local or interisland flights. In conformance with CincPoa directives, and in keeping with common domestic airways practices, odd altitude levels are designated for north and eastbound flights, and even levels for south and westbound flights.

OATC Emergency Procedures

To provide an effective illustration of OATC emergency procedures, reference is made to the chart and explanatory legend on page 5 covering an emergency involving the return flight of an aircraft in the Honolulu area. In this situation, the accepted procedure was clearly outlined, as follows:

1. Prepare a detailed chart of reported and estimated positions, including plots of RDF positions and other pertinent information.

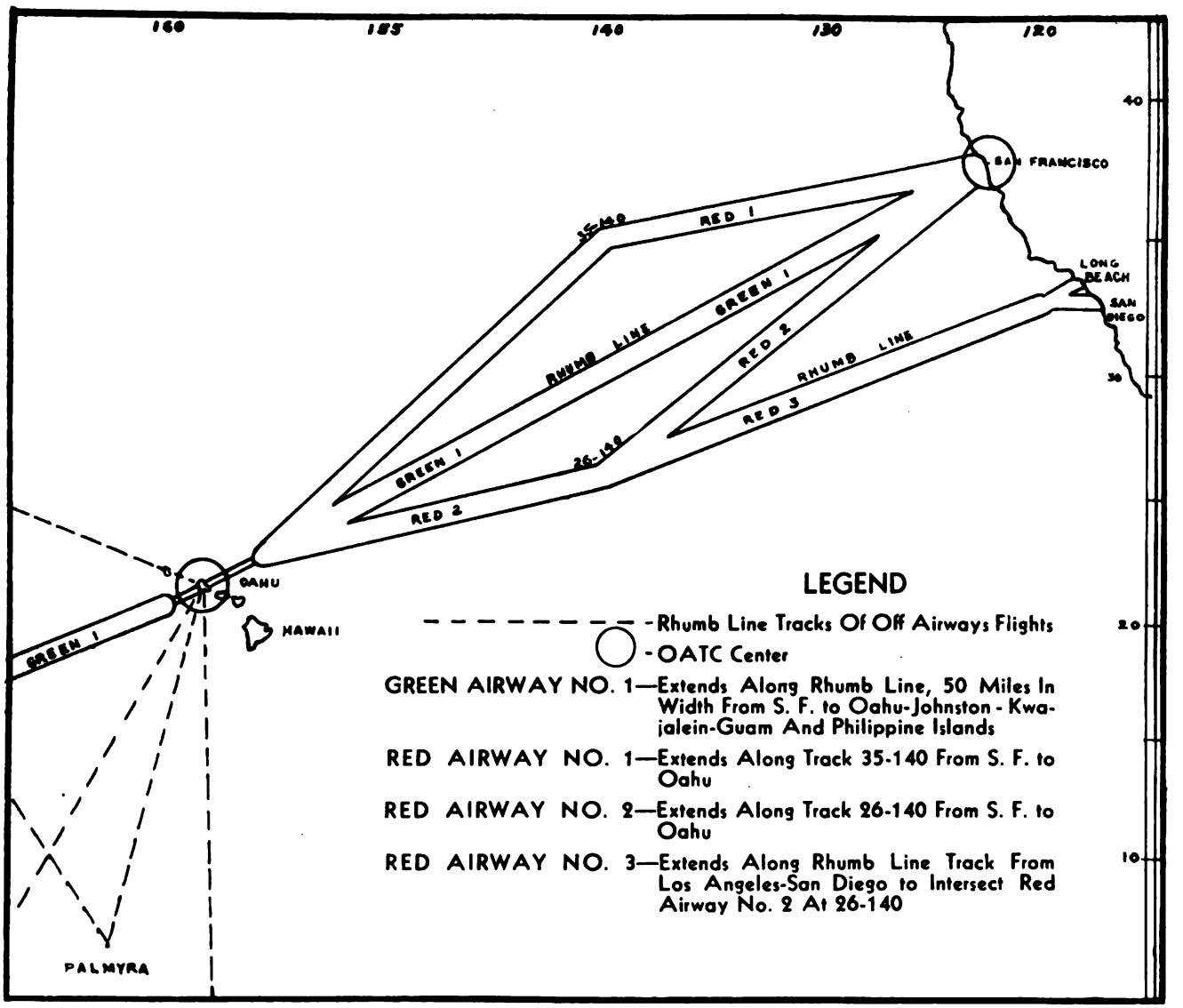
2. Furnish estimated positions, from time to time, for preparing vectors for the use of rescue aircraft.

3. Handle coordination with the fighter wing covering radar plots, the use of searchlights, etc.

4. Maintain voice communication to furnish rescue aircraft with all pertinent information, using the Honolulu range.

5. Maintain voice communication with rescue aircraft to advise them of their probable positions as indicated by shoreline terrain reported by them.

6. Generally perform such other specific duties requested by the flight-control officer.

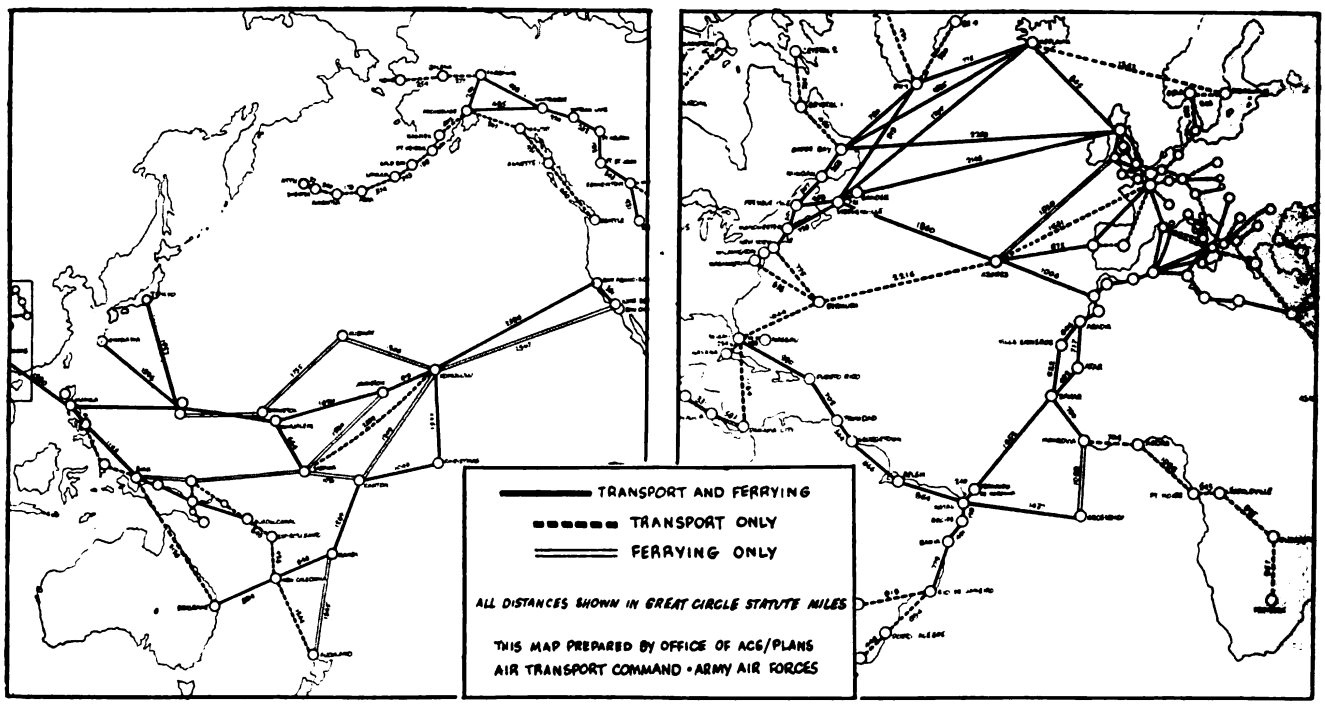


Trans-Pacific military airways system, showing separations of routes.

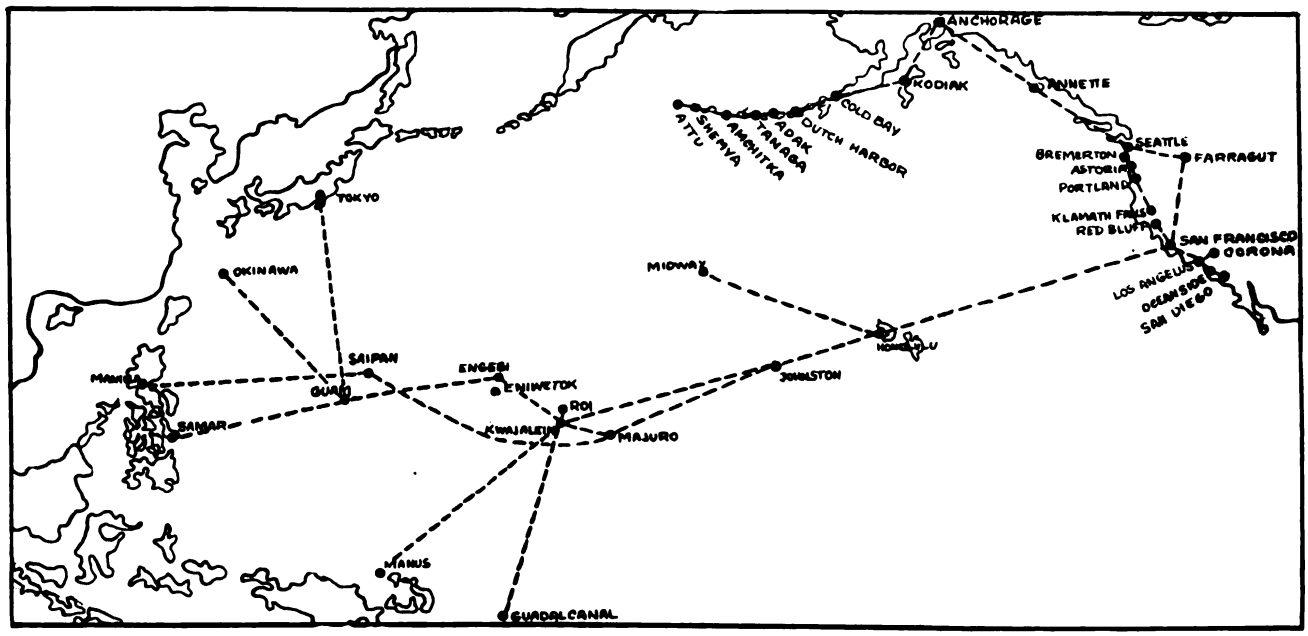
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Transoceanic Air Routes

The following charts illustrate the authorized and proposed transoceanic routes for commercial air carriers, and those of the Army Transport Command and the Naval Air Transport Service. It is believed that a careful study of these charts will convey the need for a continued and coordinated Oceanic Air Traffic Control and air-sea rescue system.

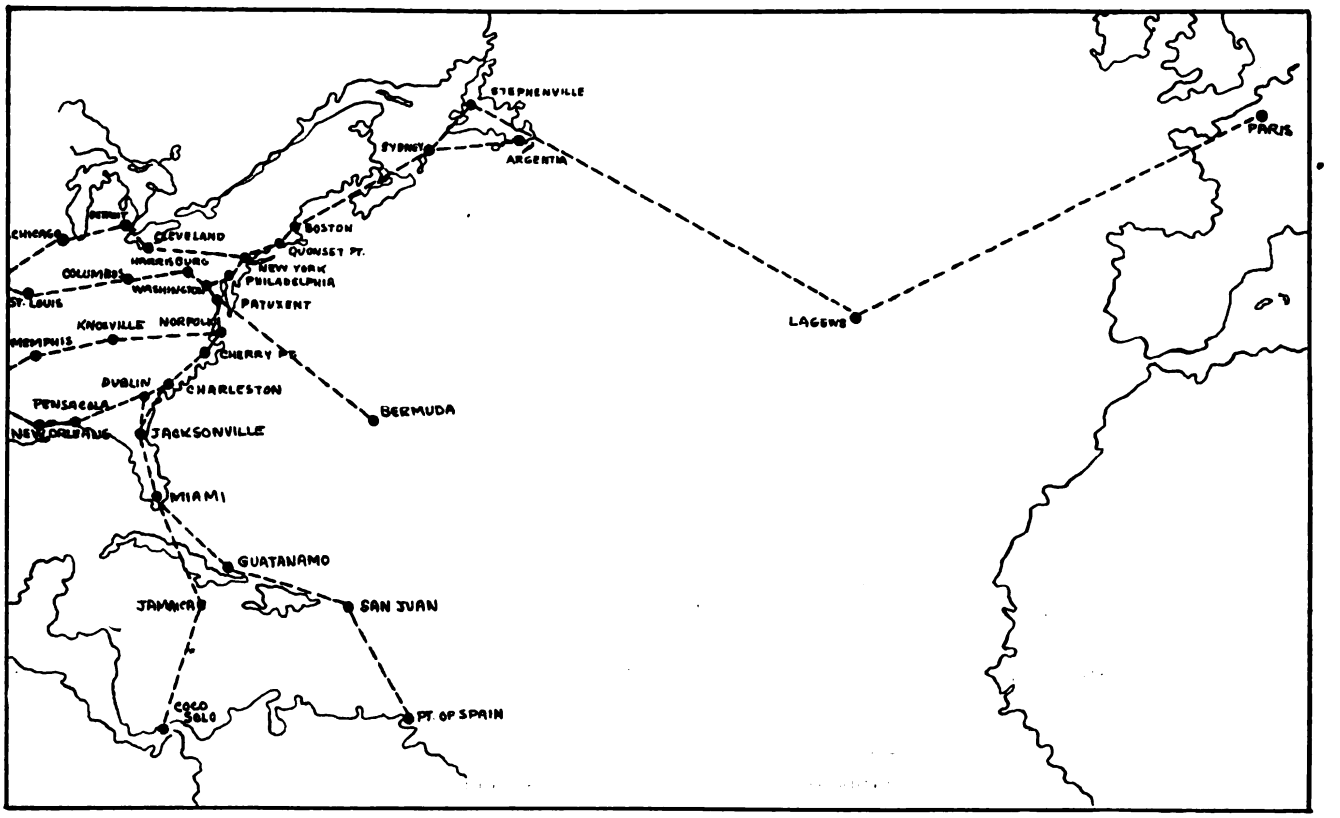


Air Transport Command routes as of September 1, 1945.

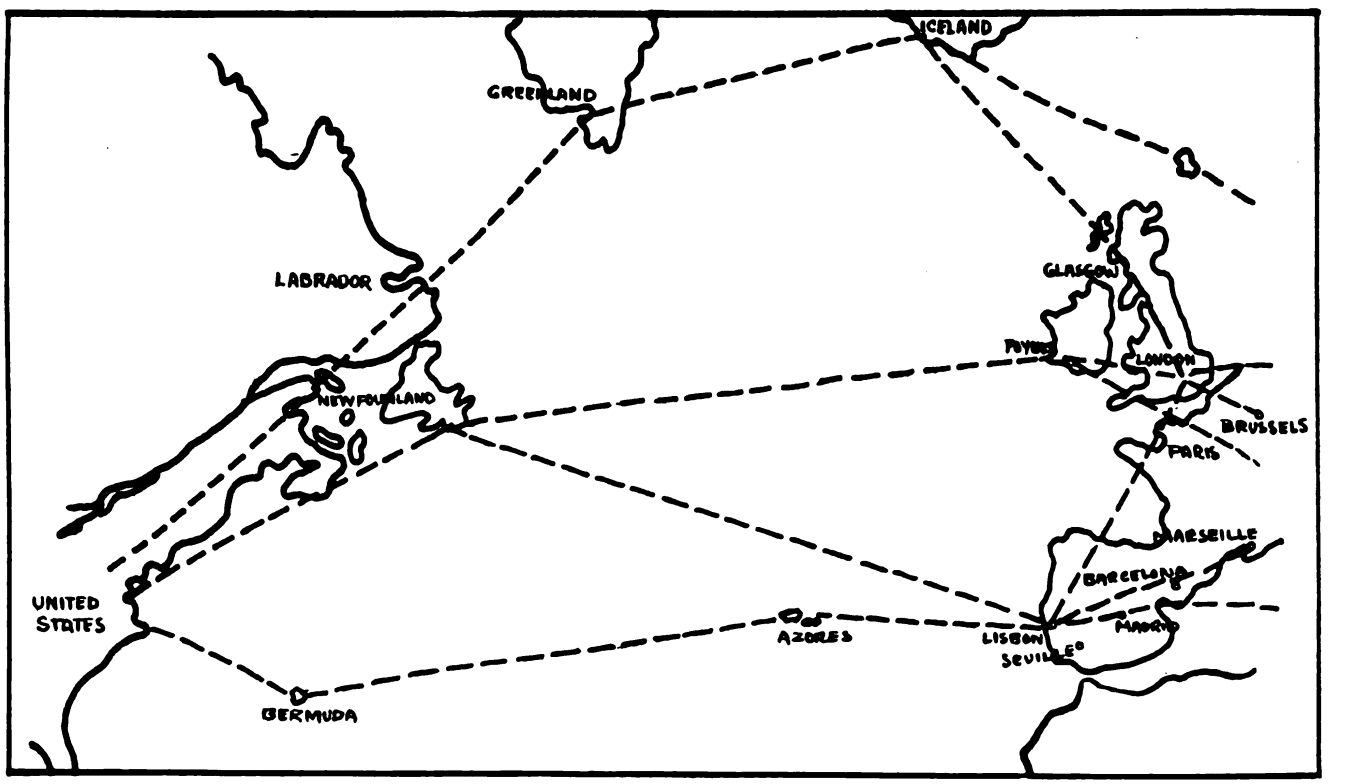


Naval Air Transport Service—Pacific routes.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN



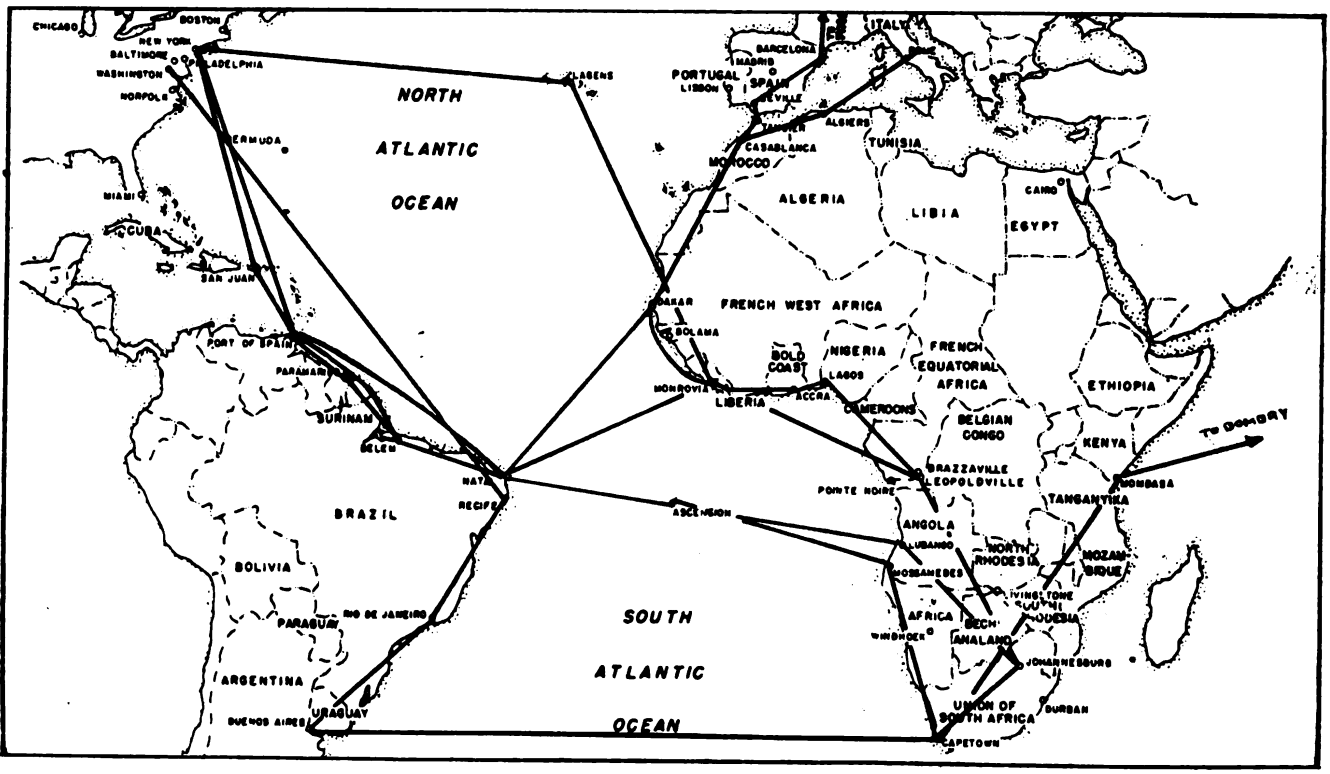
Naval Air Transport Service—Atlantic routes.



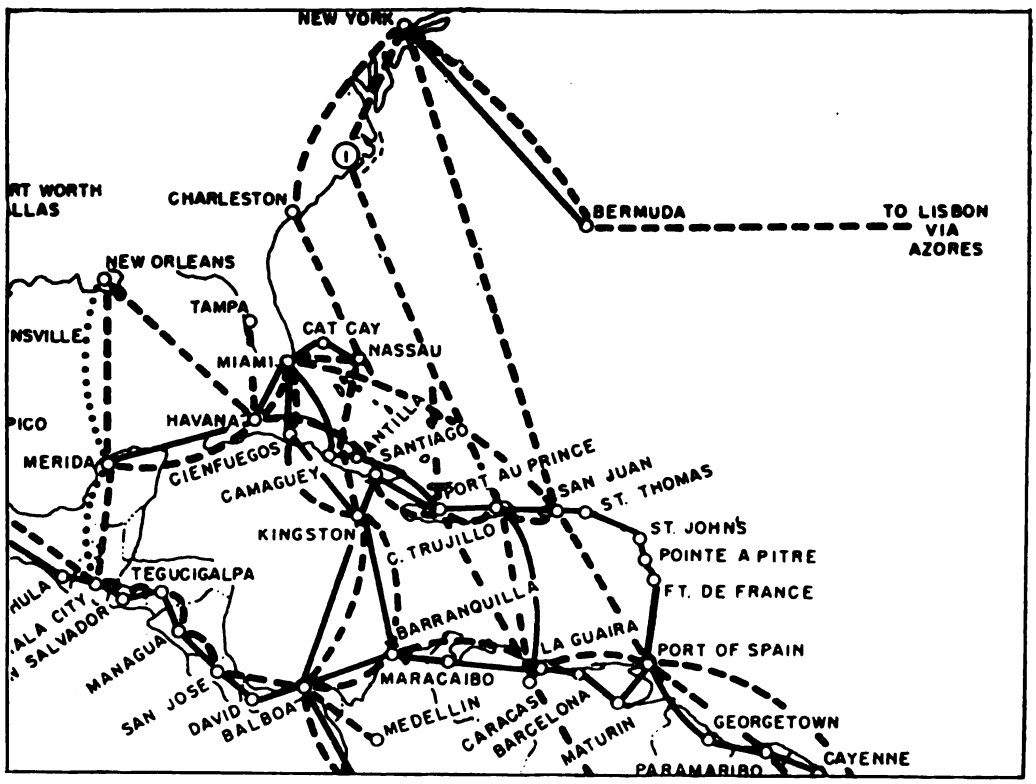
Authorized North Atlantic commercial routes.

669762--45----2

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

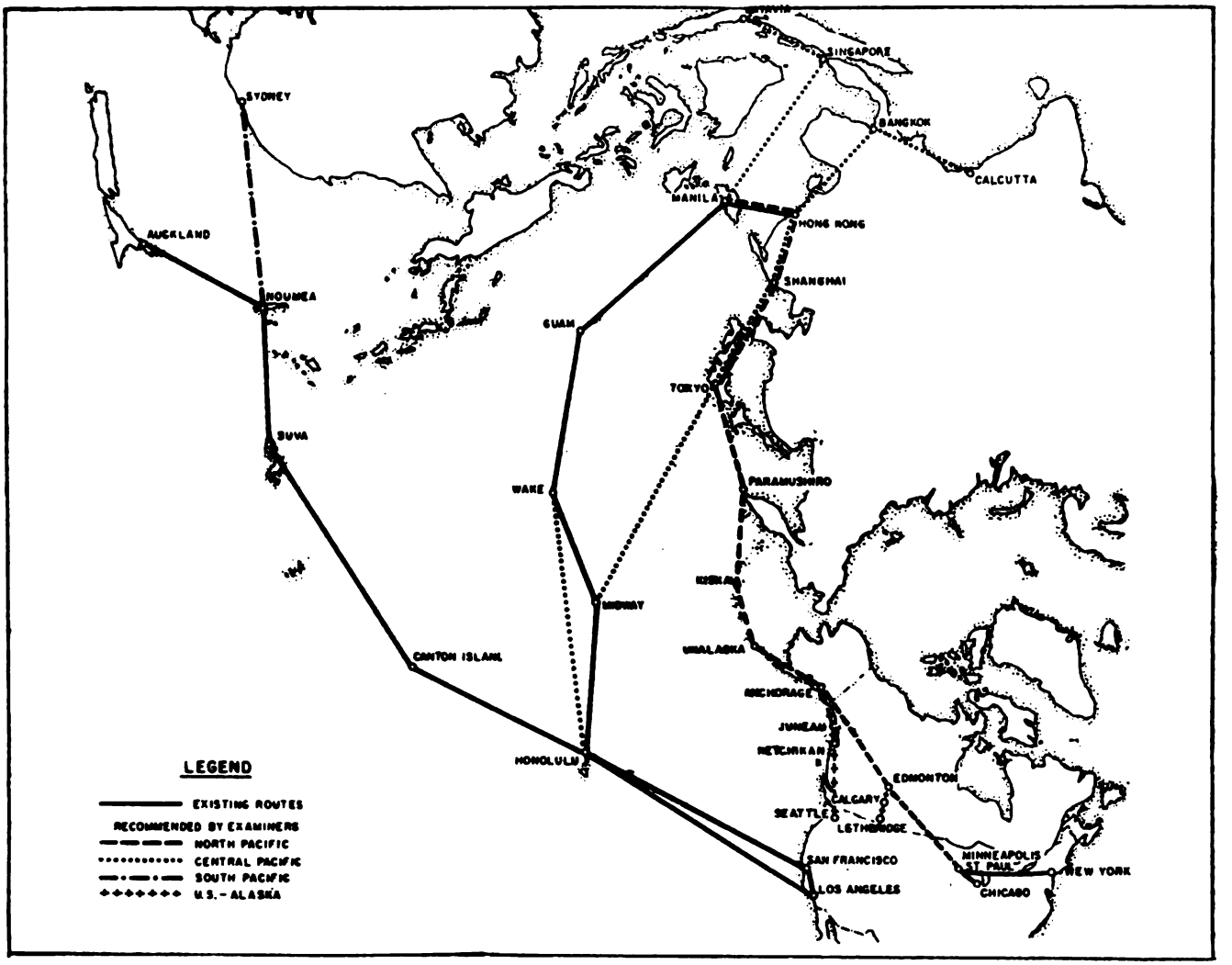


Proposed South Atlantic commercial routes.



Civil Aeronautics Board's proposed and existing Latin American services.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN



Commercial Pacific routes.

AVR on Test Run Effects Rescue

A Navy AVR, designated simply as C–16520, was on the last leg of a test run when a TBF zoomed overhead, waggled wings, raised and lowered landing gear and headed off to the west. The AVR immediately opened up to full speed and changed course to follow the plane. Within a half hour, survivors were hospitalized ashore.

The boat was undergoing tests in Florida waters at the Coast Guard ASR Boat Testing Detachment. In the vicinity, two TBFs had been out on a practice torpedo run and were headed back to their base when one developed engine trouble and was forced to ditch. The other plane immediately instituted distress procedure, then located the AVR completing its tests.

Within 2 minutes of being alerted by the zooming plane, smoke bombs dropped at the scene of the crash were sighted from the bridge of the boat. Proceeding through shallow water, which would have ripped the bottom from the rescue boat if it had gone aground, the crew located the men almost immediately.

The pilot of the ditched TBF had dived several times before he was able to extricate the radioman, who went down with the plane in 24 feet of water. When the rescue craft arrived, the pilot was unconscious due to exhaustion. The radioman had sustained leg and head injuries and was helpless. Since survivors could not help themselves in any way, two men from the boat were not able to bring them aboard by means of the scramble net. A third man had to go in the water and support the men's bodies from under the water surface to get them aboard.

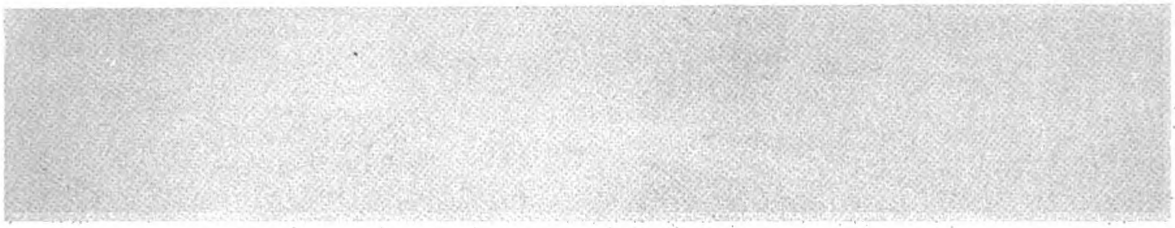
Working in a calm sea, the feat was accomplished in five minutes, but the Coast Guard lieutenant aboard the boat pointed out that it would have been extremely difficult under adverse sea conditions. He recommended the inclusion of stretchers with flotation gear as standard equipment for all such vessels.

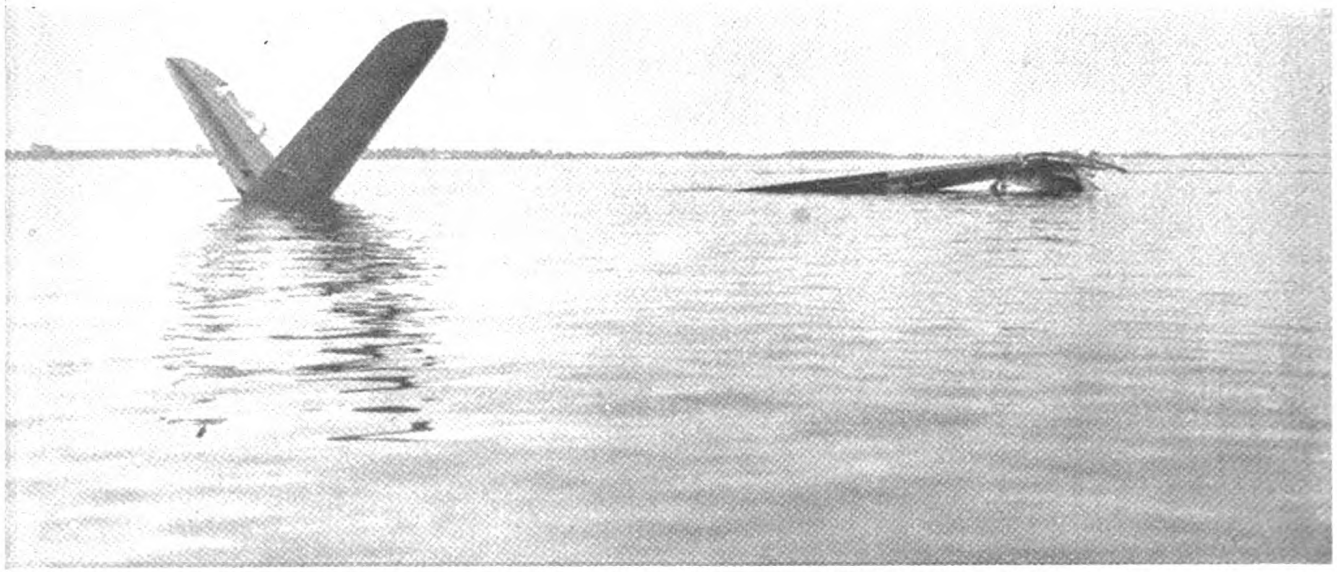
The test run turned out to be a test not only for the AVR but also for the crew's ability. Although local ASR facilities had been alerted, and planes as well as crash boats were on their way at the time, the C–16520 made the rescue within 40 minutes of the actual ditching.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Pointers may be gained by studying the

Ditching of the Hawaii Mars





This general view of the Hawaii Mars after the crash shows only one wing and the tail above the surface of the water.

On 5 August at approximately 1139, the giant Hawaii Mars took off for a test flight with a crew of four—the pilot, copilot, and two flight engineers. Also aboard were six flight test engineers. At 1459 due to a structural failure the huge flying boat made a crash landing, and water-looped, but all hands escaped without injury except for minor cuts and bruises suffered by one of the flight test engineers.

The Mars had been flying for approximately 3 hours when the flight engineer reported to the pilot that there were only 250 gallons of fuel remaining. At this point the plane was at 8,000 feet. The pilot, deciding to return for fuel before conducting further tests, headed back to the Martin plant, descending en route. At an altitude of approximately 6,500 feet, one of the test engineers requested that the pilot conduct some yaws to test the yaw meter.

After application of right rudder the plane started to vibrate and it was discovered that the leading edge of the vertical stabilizer had been torn off, causing an aerodynamic rudder lock in the full right position. Pilot and copilot applied all their combined pressure on the left rudder and were unable to return it to neutral. The Mars immediately went into a steep right spiral. The plane was brought under partial control by applying assymetric power.

Although the Mars was under partial control, it remained in a shallow right turn. The Martin control tower was informed about the nature of the emergency and preparations were made to effect a crash landing.

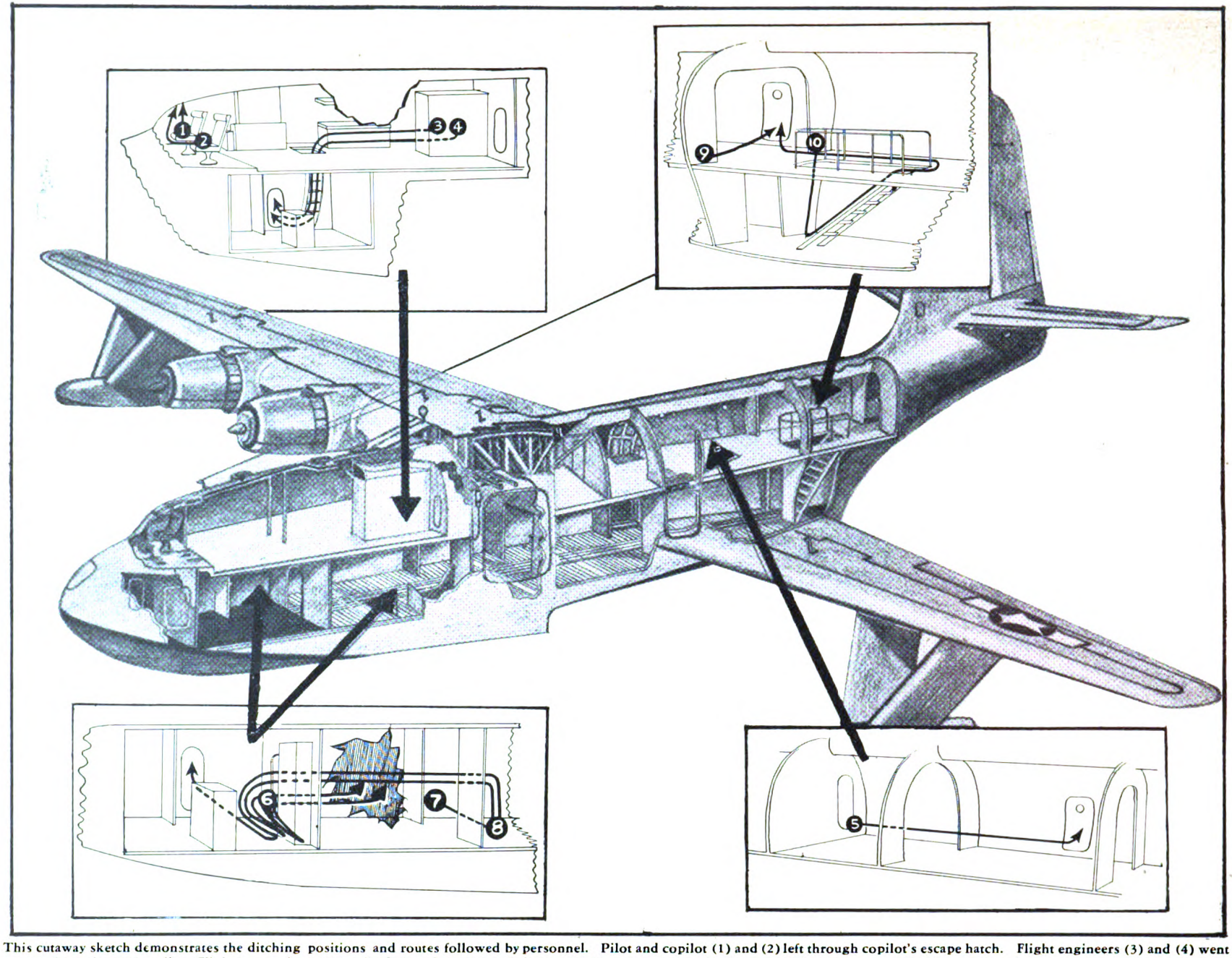
The descent from 6,000 feet was accomplished in two or three complete circles to the right.

THE LANDING

The Hawaii Mars came in contact with the water and skipped very lightly. When it settled again the speed was approximately 90 knots. The second time the plane touched the water all engine power was out. The rudder, still locked in the full right position, caused the craft to swing sharply to the right and the starboard wingtip float to drop into the water, shearing it off. The port wing then immediately dropped, shear-

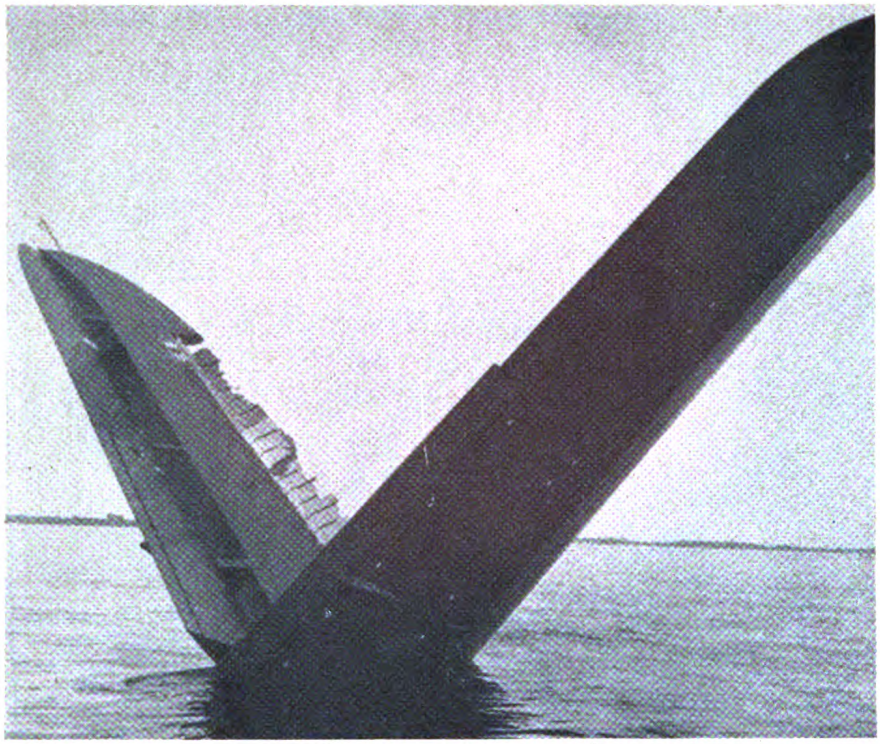
Digitized by Google

Original from UNIVERSITY OF MICHIGAN



This cutaway sketch demonstrates the ditching positions and routes followed by personnel. Pilot and copilot (1) and (2) left through copilot's escape hatch. Flight engineers (3) and (4) went out through crew's galley Flight test engineer (5) walked aft and out through door. Flight test engineer (6) whose head became wedged in when he was thrown to the outside of the loop was extricated by test engineers (7) and (8). He was carried out through the hole torn in the side of the plane. Flight test engineers (9) and (10) left through the door on the starboard side aft.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN



A photograph of the tail reveals the rudder still in the full right position, and shows the damage done to the leading edge of the vertical stabilizer.

ing off the left wingtip float. The right wing tip dipped into the water, breaking off the end of the wing and throwing the plane into a violent right water loop.

Under conditions of full rudder lock a more normal landing may have been possible had the power on the starboard engines been retained for some of the landing run.

The fuselage just abaft the trailing edge of the wing opened up and the top of the fuselage caved in.

DITCHING AND ESCAPE

While the Hawaii Mars was in its shallow turn losing altitude, the flight test engineers took prearranged ditching stations. These stations, determined during ditching drills on the original Mars, were against the bulkheads which were the strongest from an engineering standpoint. Illustrated on the accompanying cutaway drawing, they are:

1. Against forward galley bulkhead on the starboard side.

2. Against forward bulkhead, lower main cargo compartment on the port side.

3. Against forward bulkhead, lower main cargo compartment on the starboard side.

4. Against station 958 bulkhead, upper cargo compartment on the port side.

5. Against station 958 bulkhead, upper cargo compartment on the starboard side.

6. Against bulkhead door between upper bunk compartment and auxiliary power plant.

The pilot and copilot were in their seats and the two flight engineers were at the flight engineer's panel. One of these men was seated in the flight engineer's chair, while the other remained standing at the panel in order to assist the chief flight engineer in turning off all switches and cutting off the fuel upon landing.

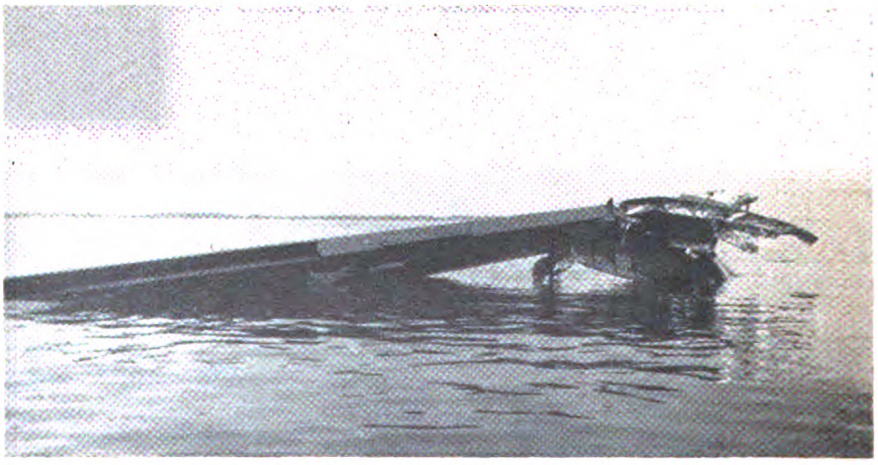
The entire crew learned a lot about ditching in this accident. They are all of the opinion that the best place for all hands, except for those in the crew who need to be forward, is as far aft as possible. The four engineers who were amidships were definitely of the opinion that they were in a poor place when the wings began to tear off. They were fortunate in having enough space left to crawl out in the prone position since the caved-in fuselage left barely enough room through which they could go.

When the plane came to a stop, all hands moved to escape:

1. The flight test engineer who was stationed against the forward galley bulkhead was thrown through the door and into the port side of the baggage compartment. His head became wedged between the deck and a reinforcement on the side. The two flight engineers stationed against the forward bulkhead went forward to extricate him, a process that required them to brace their feet against the side of the plane and pull on the man's parachute harness. This man, suffering cuts and bruises about his head, was the only crew member injured.

2. The flight test engineer on the port side of the forward bulkhead, lower main cargo compartment, was affected only by the test engineer stationed opposite him. This man on the starboard side was flung over to the outside of the final (and most violent) turn.

(Continued on page 19)



A close-up of the right wingtip shows the damage sustained.

Digitized by Google

Original from UNIVERSITY OF MICHIGAN



BLIMPS ARE WORKING MEMBERS OF AIR-SEA RESCUE TEAM

If any one word may be said to epitomize the success of air-sea rescue, that word is . . . teamwork. Much has been written and discussed about the more familiar members of the ASR "team" . . . the Dumbos and super-Dumbos, land-search parties, station and lifeguard ships and submarines, seaplanes, rescue boats. Although another teammate, the lighter-than-air craft, has already performed many rescues and has assisted in others, its work is not known generally.

The place of blimps (nonrigid craft) or other airships is that of another cog in the vast air-sea rescue machinery. They neither should be discussed as integral units nor as competitors to either the surface craft or the airplane.

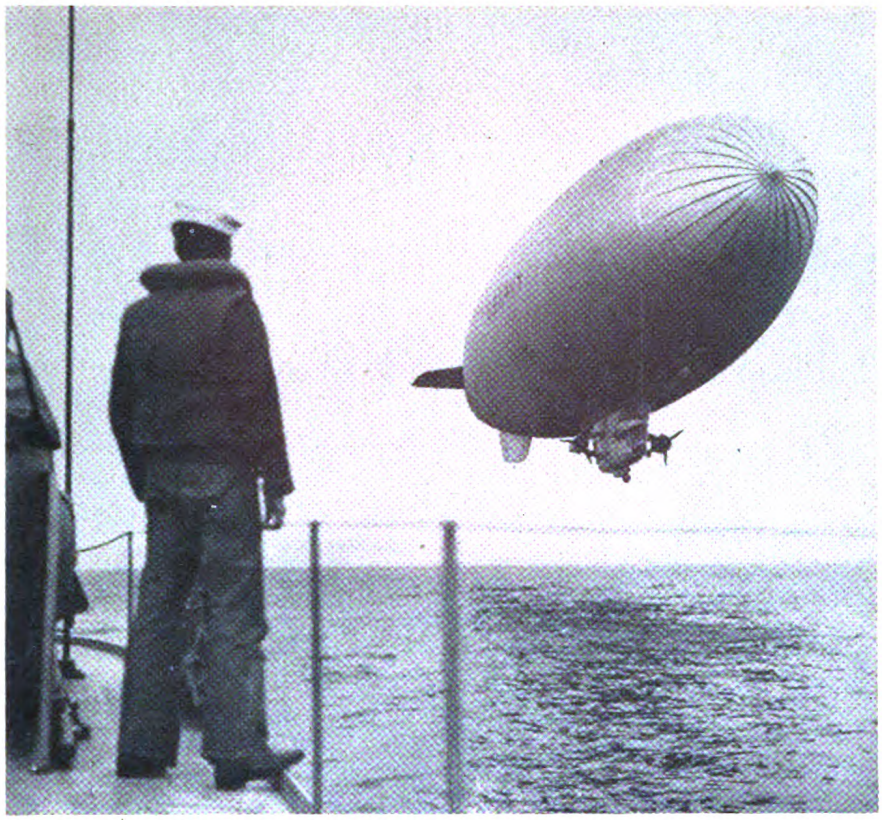
In general, the field into which the blimp seems to fit most effectively as a rescue specialist is that beyond the range of the helicopter, beyond the time-and-distance range of surface craft, or in wind and sea conditions dangerous to the landing of seaplanes for the purpose of picking up survivors. Actually the airship can effect rescues *best* in winds of approximately 15 knots or more, at which time surface and heavier-than-air craft begin to experience the greatest difficulties. The blimp's ability to rescue survivors is not, however, limited to situations in which high winds are present since a special sea anchor may be used to maintain position over a given spot in light winds.

The advantages of airships over surface craft in conducting a search are the same as the advantages of heavier-than-air craft under the same conditions. The usual air-sea rescue patrol flown by airships covers from 300 to 400 miles in an area averaging 1,000 square miles. The normal procedure is to fly approximately 10-hour flights in areas which are adjacent to those of concentrated heavier-than-air overwater flying and training. The blimps guard training and rescue task unit frequencies so that they can be diverted quickly to the scene of a distress either by the task unit commander or by vector from radar stations.

With proper handling, today's airships can perform rescues at sea and in inaccessible land areas. Procedures used depend on conditions at the scene of the rescue. If the wind is in excess of 15 knots, water ballast is dumped to place the airship in equilibrium while the ship heads into the wind, hovering over the survivor. At lower wind velocities, a special ballast bag, acting as a sea anchor, is dropped into the water to enable the airship to hover.

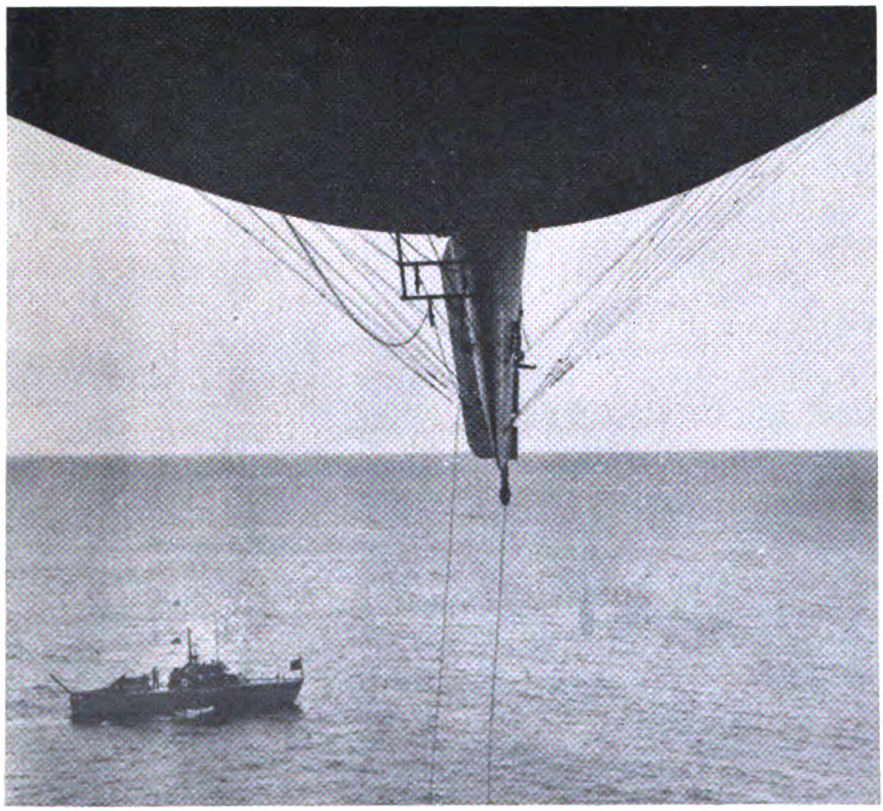
Digitized by Google

Original from UNIVERSITY OF MICHIGAN



A blimp points the way to survivors for a surface rescue vessel . . .

. . . and stands by to render assistance if necessary while the surface craft picks up survivors.



The blimp crew must be stationed to function smoothly and to perform individual tasks with maximum efficiency. The command pilot is in charge and directs other personnel for these duties:

Elevator pilot controls the altitude, trim, and static condition of the blimp.

Rudder pilot controls the direction of the blimp.

Aft pilot directs the rescue at the after door of the car.

Radioman is stationed at the radio table. He may be ordered by the elevator pilot to drop sand through the forward car door of the bomb bay, or may be ordered by the aft pilot to man the hoisting line.

Mechanic is stationed at the mechanic's panel to check engines, APU and fuel. He may be ordered by any pilot to relay messages to riggers at wheelwell who are not equipped with intercommunication system. He may be ordered by aft pilot to man the hoisting line.

First rigger rigs ballast bag, rescue ring and all related gear. He is stationed at the wheelwell to trip either quick-release when ordered. He may be ordered by aft pilot to man the hoisting line.

Second rigger assists the first rigger in all his duties. He moves to after end of the car to rig counterweight on hoisting line. He may be ordered by aft pilot to man hoisting line.

A pickup at sea may be accomplished in one of several ways. If the survivor is able to aid himself, a rescue ring may be lowered for him to climb into. The lowering line then is hoisted aboard.

More than one means of hoisting the line has been devised and used successfully. Employment of a sand counterweight makes the job easier; when the survivor is aboard, the counterweight is jettisoned by means of a tripping ring to avoid the necessity of hauling it back aboard. If a counterweight is not used, the survivor may be hauled up by hand over hand, an operation requiring the services of five men to heave around on the line and a sixth man to snub the line around one of the frames inside the cab. Ten-second pauses during the hoist give the men a chance to rest. The manual hoist is soon to be modified to an electric hoist capable of lowering 450 feet of cable and lifting 500 pounds (breaking load of 4,000 pounds) at the rate of 175 feet a minute.

Digitized by Google

Original from UNIVERSITY OF MICHIGAN

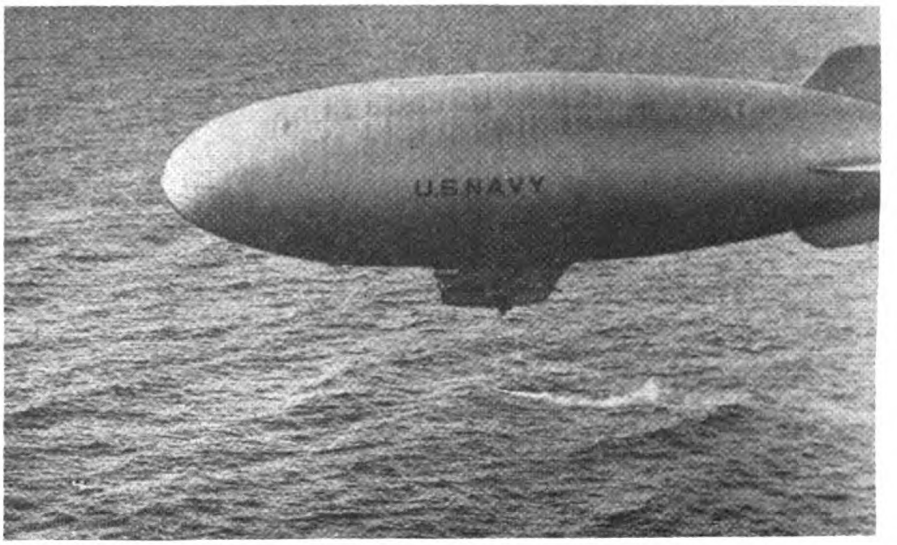
The ballast bag, or sea anchor, used for hovering over water in winds of less than 15 knots, is a large canvas receptacle shaped like the finger of a glove. It is open at the base and holds about 2,000 pounds of water when full. It has a quick-release attachment at the bridle in the wheelwell for jetttisoning bag and cable in an emergency. A second quick-release is located just above the bag itself for upending it and spilling the water when the pickup is accomplished and the drag no longer is needed.

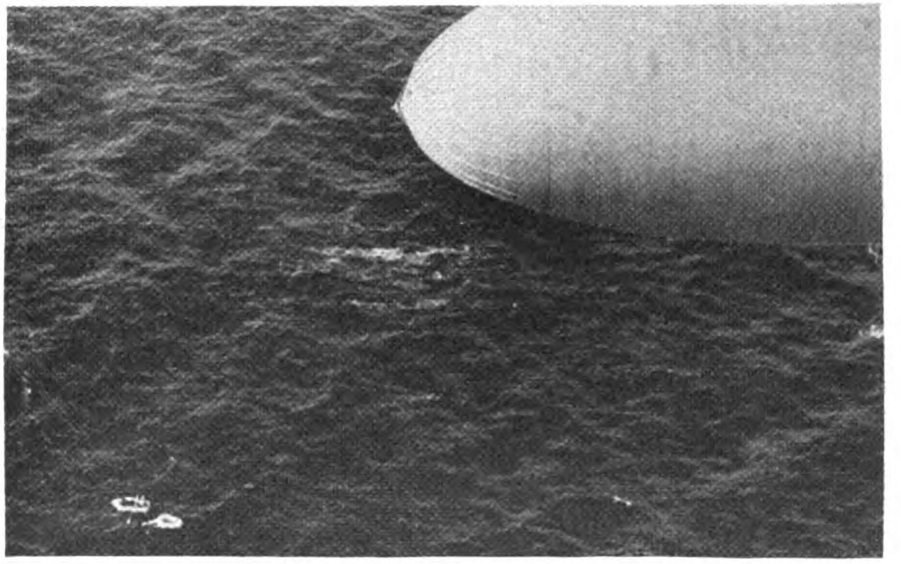
Not only can the airship pick up the able-bodied survivor who can help himself, but it also can lower a crew member to assist injured or weak survivors. This is done with the same equipment to which has been added a Mark 4 life raft and an exposure suit.

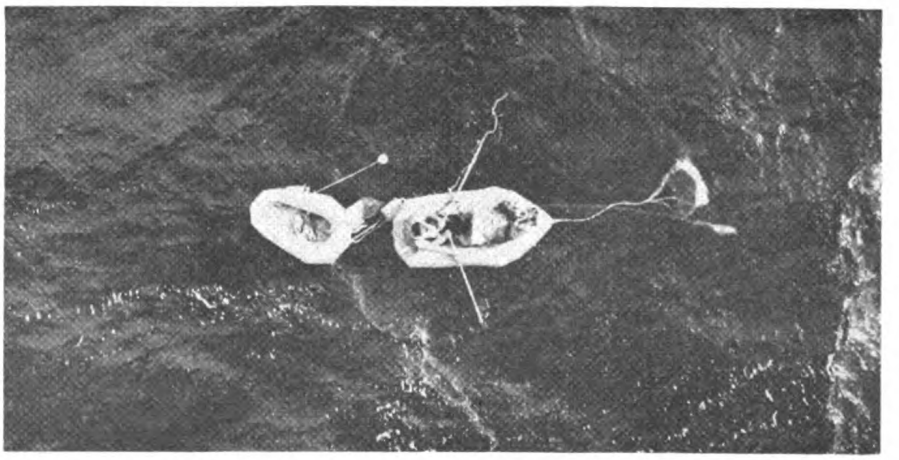
The life raft is secured to a rescue ring tag-line and is inflated as it is pushed out the after door. The tag-line is a 10-foot line secured to and hanging down from the rescue ring. When the preliminaries with the raft have been completed, the crew member dons the exposure suit and gets into the rescue ring. He is then lowered to the water by the best means available and once clear of the blimp, he directs the lowering of himself through signals to the third pilot.

The rescuer is lowered directly into the raft, extricating himself from the ring and proceeding to the survivor or survivors. The survivors are then hoisted aboard the airship, those in a more critical condition taken aboard first. While the hoisting operation is taking place, the rescuing crew member keeps the raft in position by holding on the ballast bag. If possible, a "walkie talkie" is supplied to the crew member to enable him to explain condition of survivors and obtain any necessary instructions.

Coordinated air and surface searches and rescues may be carried out the same as the HTA and surface vessels. The blimp has excellent facilities for maintaining contact with survivors, to direct surface craft to the scene of a crash, and to supply survivors with equipment. When necessary to supply equipment, the airship need not expose either itself or the survivor to the many inaccuracies inherent in dropping gear. By *lowering* gear quickly and accurately to a survivor the downed airman is spared the tremendous exertion of swimming to equipment which may have been dropped 50



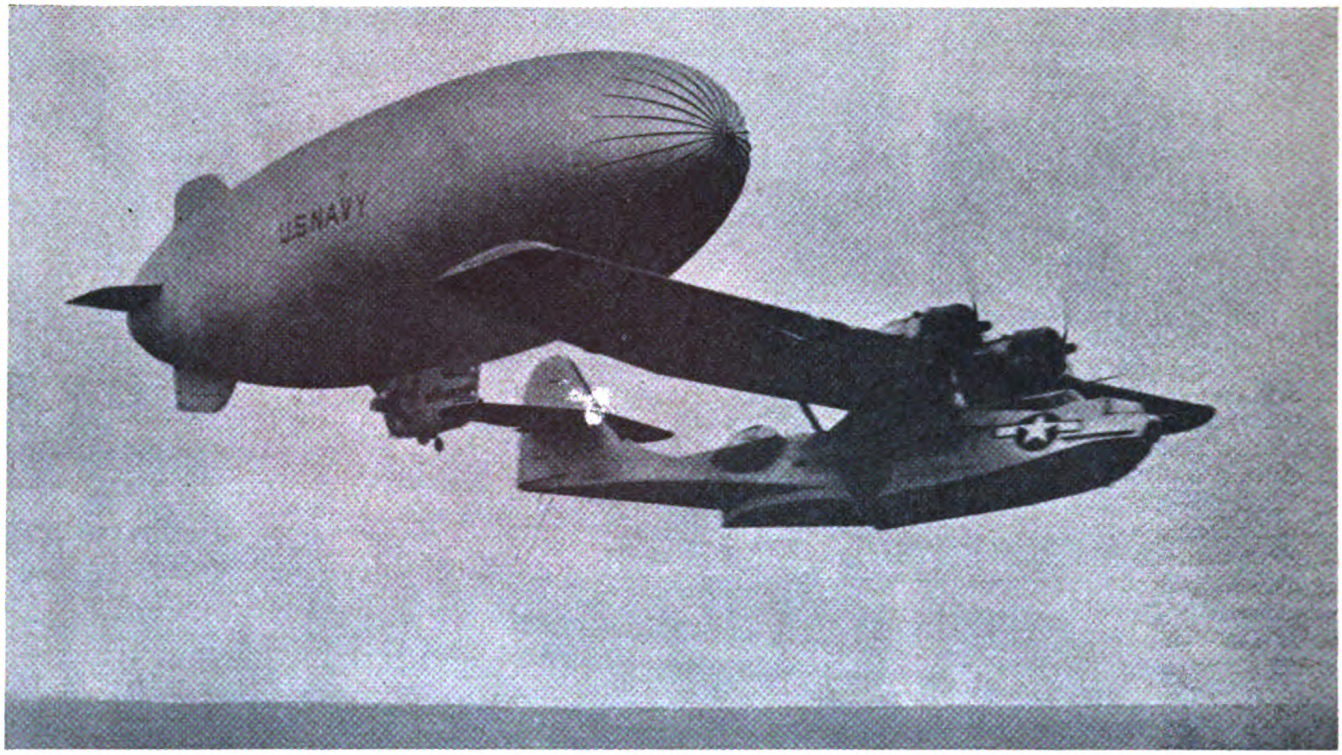




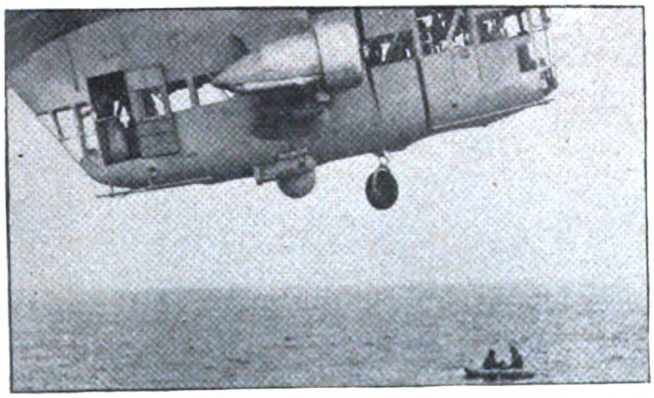
Top to bottom: An airship on rescue patrol spots a raft and smoke signal. It approaches the survivors; hovers over them preparatory to effecting the rescue. Man in bottom photo can be seen with hands cupped to mouth, calling to blimp crew.

669762—45——3

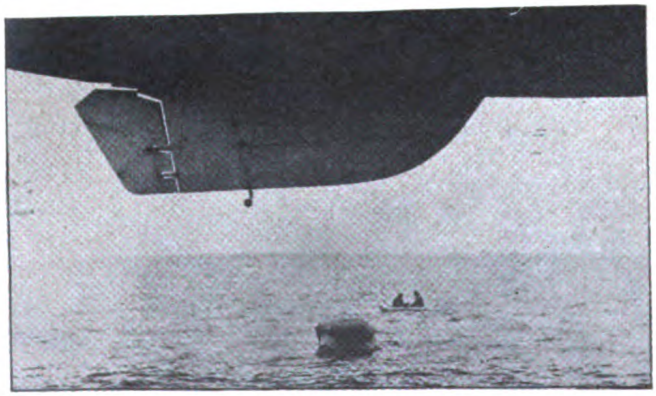
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



K-type airship and Catalina search for survivors.









Upper left: The raft is sighted and crew members of the blimp prepare to drop equipment. Upper right: Preparations for dropping a raft to the survivors, as seen from within the cab of the blimp.
Lower left: The raft hits the water. Lower right: The decision made to pick up the survivors, a rescue harness is lowered to the survivors from the after door of the blimp.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN



Outside land survival area and survival hut.

NAS Jacksonville Conducts

Land Survival Training for Aircrewmen

A land survival training course for aircrewmen has been established at Naval Air Station, Jacksonville, in which crewmen receive instruction which expands and supplements that received in gunnery schools. A demonstration area, located next to Survival Hut No. 2, emphasizes tropical survival, but pertinent information relative to seashore and arctic survival is stressed also. Instrumental in inaugurating the course was Lt. Frank Craighead, USNR, who with his twin brother, Lt. John Craighead, USNR, has achieved wide reputation for practical aspects in the multifarious field of survival.

Two hours are devoted to demonstration area instruction and practical work; each exhibit is discussed in relation to its importance in tropic, arctic and seashore survival. For example: the parateepee is discussed as a cold weather shelter with bough beds, sheltered fire and windproof material, even though it is demonstrated in a tropical setting using Spanish moss as a bed. Likewise, a palm thatch leanto will be as important for its shade along a blazing seashore beach as it will be for a rain shelter in a humid tropical forest. Thus, *techniques* are stressed whose applications may be utilized in varying climatic and topographic conditions.



Extracting a cabbage palmetto heart and slicing a green coconut for drinking.

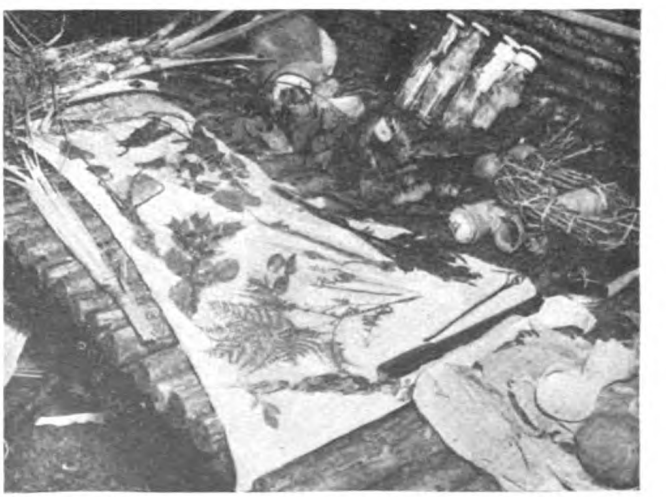


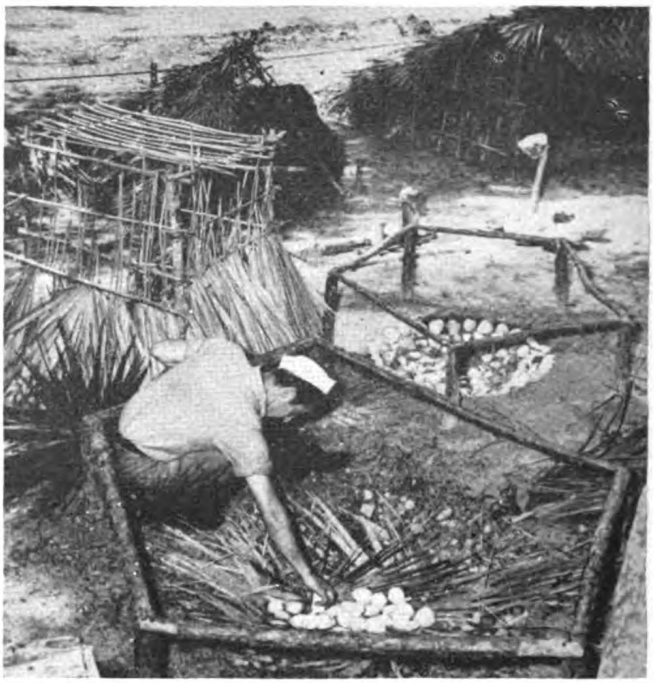
Table display. Fresh and pressed plants are demonstrated bottles of tinder in background.

Digitized by Google

Original from UNIVERSITY OF MICHIGAN



One-man tent shelter, bamboo fireplace, cooking utensils, coconut husking stick and palm log fireplace.



Steaming and baking pits, smoking rack, thatched leantos.

Included in the demonstration area lecture are:

WATER

For each lecture a section of grapevine is cut previously and plugged with clay. Both ends are slashed and water is drained out during demonstration. Grapevines are numerous in the swamps along the St. John's river and in the palmetto oak hammocks back from Ponte Vedra beach and vicinity. Air plants or bromelias are stressed as a source of jungle water. Seaside purslane also is discussed as a thirst quencher and source of food and vitamins. Cactus leaves and stems as water providers are mentioned and demonstrated.

An instructor draws a diagram in the sand to illustrate where to dig for fresh water along a beach or in any other apparently dry area. Filtering water through a bamboo sand filter is shown and the men are instructed where they can expect to find pure and impure drinking water. Halazone tablets and waterborne diseases are discussed. Methods of boiling water in a bamboo container or in a paper or banana leaf cup are shown.



Parahammock and bough bed with parachute tent.

SHELTER AND BEDS

Construction and use of the following are explained: a bough bed using both tropical and northern vegetation, a parateepee and parahammock for cold and warm weather use. The correct method for using the back pack mosquito net and hammock is discussed. Also pointed out are the use and techniques of constructing a palm thatch leanto and a one-man palm tent shelter involving leaf overlap, a palmetto leaf spring bed and a coconut thatch bed. Each man is afforded the opportunity to thatch a section of coconut frond to ascertain its use for shelters, beds, baskets, sun shades and litters.

FIRES AND COOKING

Various tinders are used to point out the numerous sources available for fire making. Fires are started with the flint on the bottom of the emergency match box, by using burning glass in the back kit, and by employing the following tinders: cattail fuzz, thistledown, crushed dry coconut husk, and inner bamboo membrane. For starting a fire in wet weather, cajeput bark and chipped pine knots are recommended. Banking a fire is demonstrated, and the value of carrying coconut husk coals in a bamboo container explained.

Instructors emphasize the necessity of a man's ability to make a fire in below-zero weather. Using pine pitch, they

Digitized by Google
Original from UNIVERSITY OF MICHIGAN



Jungle fowl treadle snare, bark cord.



Hanging rabbit snare, bark cord.

demonstrate the value of resins for starting fire in the North. (Even a tiny fire in a snow cave is invaluable.) Uses of the following are shown: reflector fire, bamboo fireplace, bamboo cooking vessels, stone and shell steaming kits, smoke and drying rack, various types of fireplaces and cooking rigs, shell containers for cooking food, parateepee fire. A few foods—such as taro, candlenuts, cabbage heart and greens—are cooked for sampling purposes to acquaint men with the appearance and taste of foods found growing wild.

FOOD

These foods are gathered or are available for demonstration:

Seashore Foods

Oysters, clams, scallops, crabs, fish, conchs, sea cucumbers, chitons or sea lice, seaweeds. These include species found along both rocky and sandy shores.

Local Plant Foods

Arrowhead tubers, palm cabbage, cattail roots and shoots, saw grass shoots, palmetto berries, cactus apples, grapes, blueberries, blackberries, elderberries, catbriar roots, golden club roots and berries, seeds of peltandra, thistle stem, dock, water hyacinth, etc. There is a great variety of local wild foods in season.

Snares for Foods

A series of snares using bark and parachute string is demonstrated. Included are a bird snare, jungle fowl or wild pig snare, and a rabbit or small mammal snare. Explanations of their construction and setting accompany the exhibition.

TABLE DISPLAY

Various survival techniques and handiwork are viewed on table displays, including: construction of fish lines, ropes and lashings from palmetto leaf fiber, sugar palm fiber, mulberry roots, pandanus fiber, yucca fiber and parachute thread; making fish nets, snowshoes, snow goggles and knapsacks from parachutes; fashioning fiber and coconut husk shoes, sunshades, etc.; constructing fish spears, cooking utensils, bamboo cups, water buckets, etc.

Each trainee twists a short line from a palmetto leaf and husks a coconut, using coconut husking sticks. In addition, K rations and makeshift candles, awls, hooks, mirrors, etc., are displayed.

Although not included in the training course at present, it is anticipated that a field trip will be included in the near future. This would entail instruction and practical application of other techniques instrumental in successful living off the land and coping with environmental hazards.



Thatching palmate leaves.

Digitized by Google

Original from UNIVERSITY OF MICHIGAN

Boat Testing Detachment Becomes Permanent Research and Testing Unit

Conclusion of Work With Boats for Air-Sea Rescue Sees Continuance for Further Studies and Development

Late in 1944, the Committee to Study Adequacy of Air Sea Rescue Facilities saw the need of testing boats for rescue use. Accordingly, the recommendation was made to the Board for Air Sea Rescue that a project be set up to perform actual tests and to evaluate air-sea rescue craft.

The project, operated by the engineering department of the Coast Guard, began its work in December of 1944 at Rockland, Maine. This site was chosen for cold weather work, later to be moved to Key West, Fla., in March, 1945, for purposes of studying craft in tropical waters. In this way, the vessels were observed under all possible operating conditions so that a complete evaluation of their qualities could be made.

Altogether, almost a score of existing boats, some designed for air-sea rescue and others simply small combatant vessels already in use which were thought to be adaptable for the purpose, were exhaustively tested under most rigorous circumstances. The committee which instigated the project also set forth the information which was desired, and specified what data was required.

The types of boats fell into three categories:

1. Those used for offshore operations; self-sustaining over a period of time.

2. Those used for offshore operations, but operating from a base from which it is necessary to get frequent replenishments of fuel and supplies.

3. Those used for inshore operations in protected waters.

Sizes of the boats varied from the 110-foot SC down to 18-foot swamp gliders. The tests included Army, Navy and Coast Guard Vessels to determine those most suitable for air-sea rescue, through evaluation of their characteristics. Improvements in design and operating features also were sought.

Not only were runs made in weather to determine seaworthiness and general handling qualities, but also the boats were tested for comfort and general considerations under all varieties of conditions encountered.

With the completion of the task for which the Boat Testing unit was formed, it was reestablished for continued testing at the Coast Guard Yard, Curtis Bay, Md. There it will carry on with testing of devices, the development of which it has already begun. Signaling devices, methods of transferring personnel from boat to plane, air-sea rescue techniques, etc., will also be the objects of tests. Effort will be made to develop a standard method of doctrine for operating under all conditions. The unit will also function as a proving ground for new devices brought out by the Research and Development division of the Coast Guard.

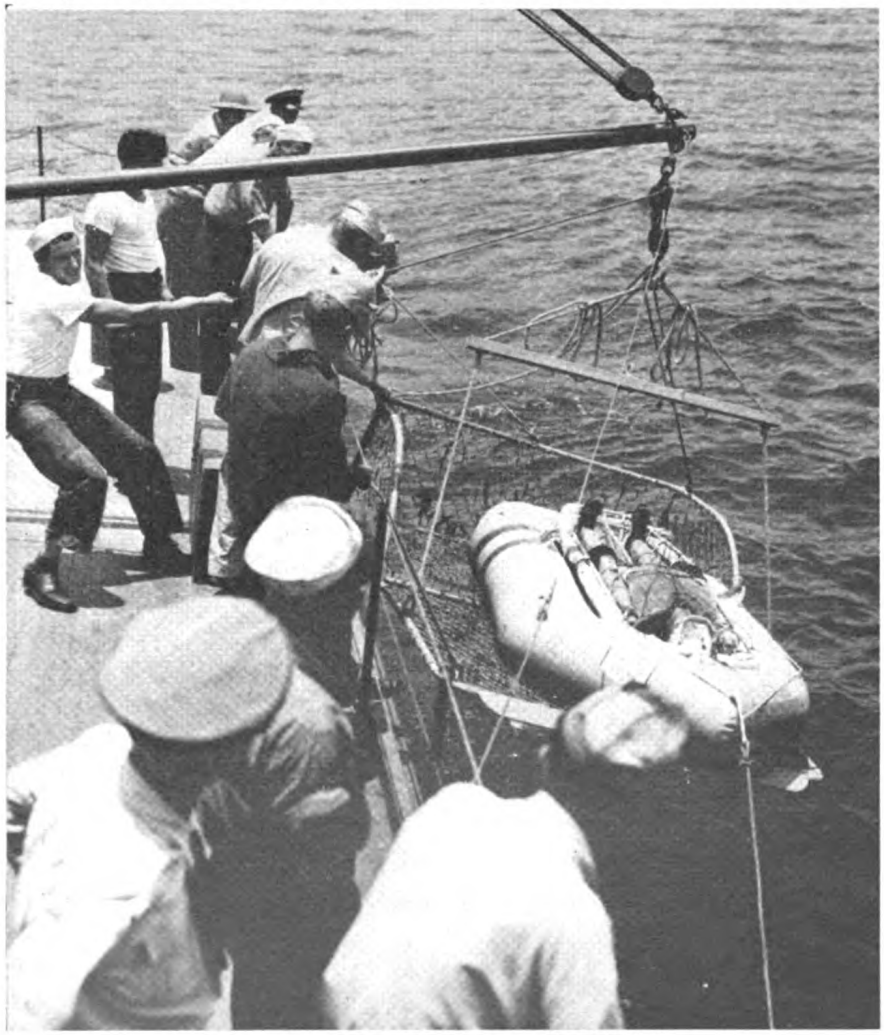


Figure 1.—Scooping up raft in pipe-and-wire basket.

Apparatus for Bringing Survivors Aboard Vessels Originated and Checked

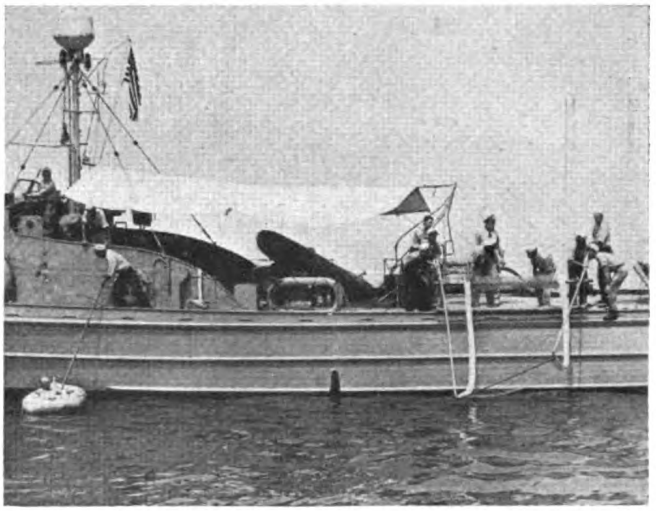
In the early stages of the testing period of the northern zone, it became very apparent that a need existed for an intensive development of special rescue devices. One of those needed was apparatus which would enable boat crews to bring injured persons aboard efficiently and quickly, with a minimum of danger of further injury.

It was realized that rescue or recovery means should involve equipment of more mechanical nature than pos-

{Cont'd on page 40}

Digitized by Google
Original from UNIVERSITY OF MICHIGAN







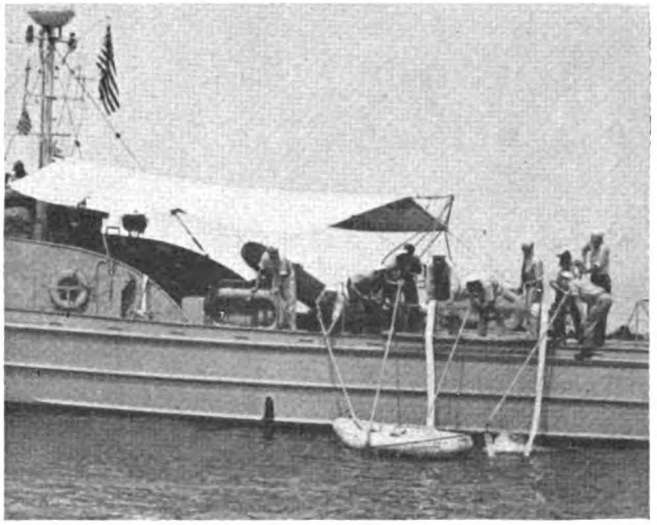


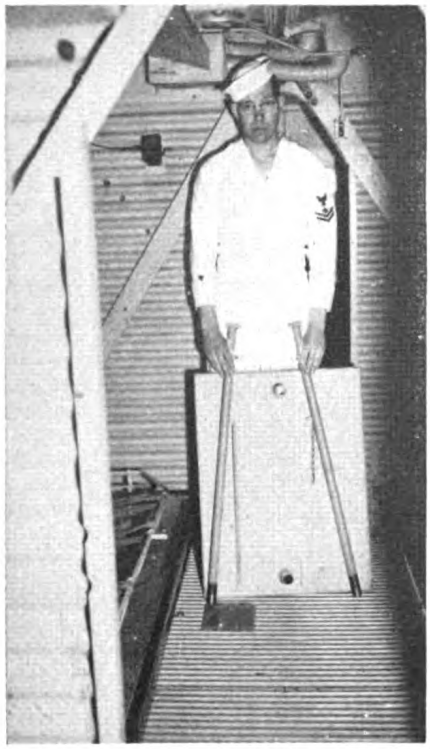


Figure 2.—Use of rescue platform in lifting raft aboard. Top to bottom: approaching the raft; the raft on the platform and being hoisted to the deck; raft at deck level and being hauled in.

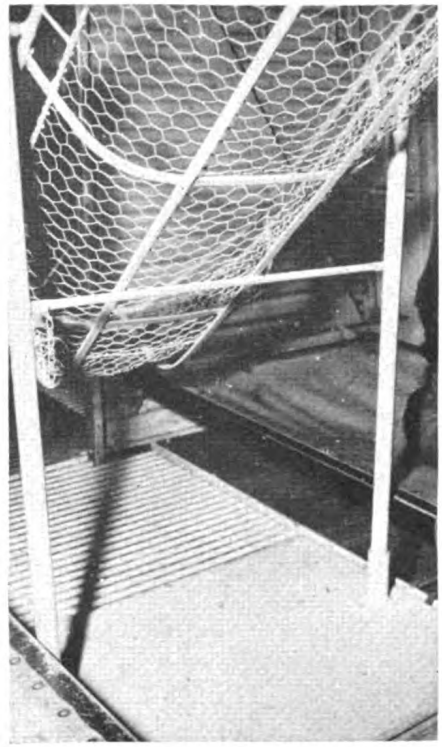


Figure 3.—Use of rescue reel and wire net to pick up raft. Top to bottom: approaching the raft, man with boathook tends raft to the net: raft is maneuvered to net; net is rolled on reel while outboard edge is tended from deck.

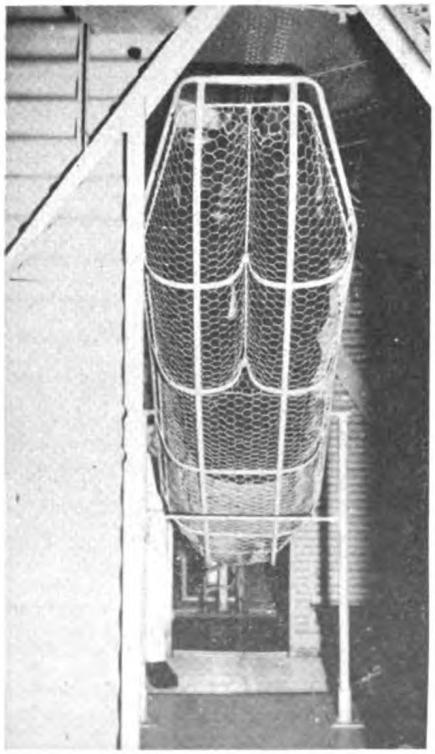
Digitized by Google
Original from UNIVERSITY OF MICHIGAN



1. Ready to rig, aircraft.



2. Close-up showing brace connected.



3. Tilted, head down.



4. Tilted, feet down.

Eve Method

Four C.G. Air Stations and Adaptations

WESTERN SEA FRONTIER,

To expand information on the Eve method of artificial respiration, which was first described in AIR SEA RESCUE BULLETIN No. 2 and elaborated upon in the No. 9 issue, the illustrated applications on these two pages of the method as used with a Stokes litter on the 63-foot aircraft rescue boat and PBM aircraft were forwarded by the Air-Sea Rescue Unit, Northern California Sector, Western Sea Frontier. Installation is being made on PBYs. Following this is a page of diagrams and three pages which demonstrate pictorially, application of the Eve method in Washington, D. C., and Coast Guard Air Stations in Miami; St. Petersburg, Fla., and Port Angeles, Wash.

Information on the Eve method was first observed by the Flight Surgeon, Coast Guard Air Station, South San Francisco, in the *Journal of the American Medical Association*, in a *BuMed News Letter*, and AIR SEA RESCUE BULLETIN No. 2. As a result of these articles, the attention and efforts of the Air-Sea Rescue Unit and the medical department at San Francisco were directed to study and test this artificial respiration method. After extensive experiments, it was concluded that the Eve method was superior to any other in the treatment of aircraft casualties. Steps were immediately taken to install the rigs shown in the accompanying pictures (illustrations 1–7) and to indoctrinate all attached personnel in their use.

Resulting from tests of the rigs and indoctrination of personnel, all crash boats assigned to the Air-Sea Rescue Unit are now equipped and competent to use the Eve method. Aircraft crews also have been trained and rigs installed in patrol type aircraft. As pictured, it is simply a device which permits the use of the regulation Stokes litter with a fulcrum.

Installation of the apparatus on the PBM is slightly different from that for crash boats. The PBM apparatus is mounted in a plywood base, is movable, and can be used on the beach. For crash boat use, the apparatus has a fixed

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Resuscitation

Washington, D. C., Devise Pictured

SAN FRANCISCO

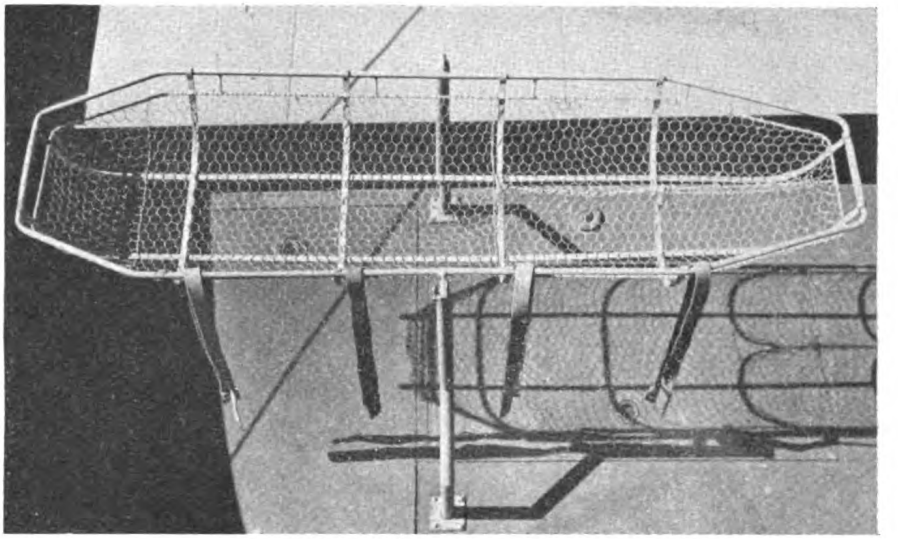
position and is mounted in the aft cockpit. The only modification to the litter is that 2-inch studs with ⅝-inch outside diameter are welded to the top frame at a 90° angle. On the standard Stokes type for installation in the AVR boats these studs are welded 36 inches from the head end, and in aircraft installation they are welded 32 inches from the head end.

Details for the PBM apparatus are as follows: base plywood is 24 by 32 by ¾ inches; sockets are made from ¼ by 4 by 4 inches 1020 steel plate, using 1½ inches O. D. 1¼ inches I. D. tubing welded to the plate. Each plate is secured to the plywood base with four No. 12 wood screws. The vertical pieces are made from 1¼ inches 4130 tubing, with 0.062 inch wall thickness, and 39 inches high. The bearings for the litter are ¾-inch O. D. ⅝-inch I. D. 4130 steel tubing welded at 90° to the vertical pieces. The hinge brace is 25 inches from the base and is of ½-inch 4130 tubing.

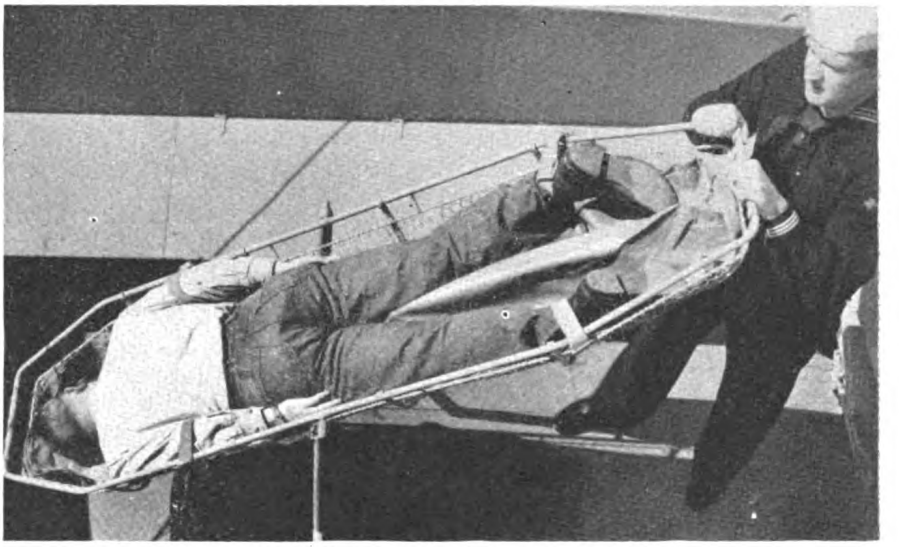
Details for the crash boats are very similar. (See diagram, next page.) The main exceptions are that the sockets are sunk into the deck and the vertical pieces modified to span the aft cockpit hatch. In addition, a top clamp is provided for the bearing surface of the AVRs so that the litter will not be tossed loose in a heavy seaway.

The use of the Eve method in air-sea rescue has many advantages:

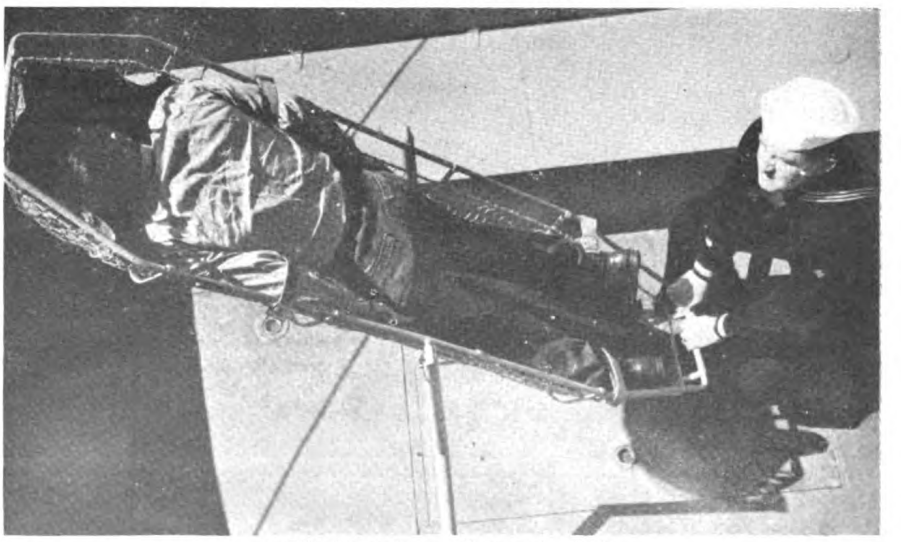
1. It obviates the necessity of removing a patient from the stokes litter in which he was brought aboard.
2. It is easier on the patient (a factor of prime importance in aviation casualties since rib and extremity fractures combined with chest burns are found frequently).
3. Fractures can be immobilized, shock combated and hemorrhage controlled while artificial respiration is administered.
4. It is less tiring to the operator and requires less skill.
5. It would be practically impossible to use the Howard-Silvester method or the Schaefer method while in a seaway on the standard AVR.



5. AVR; installed and ready for patient.



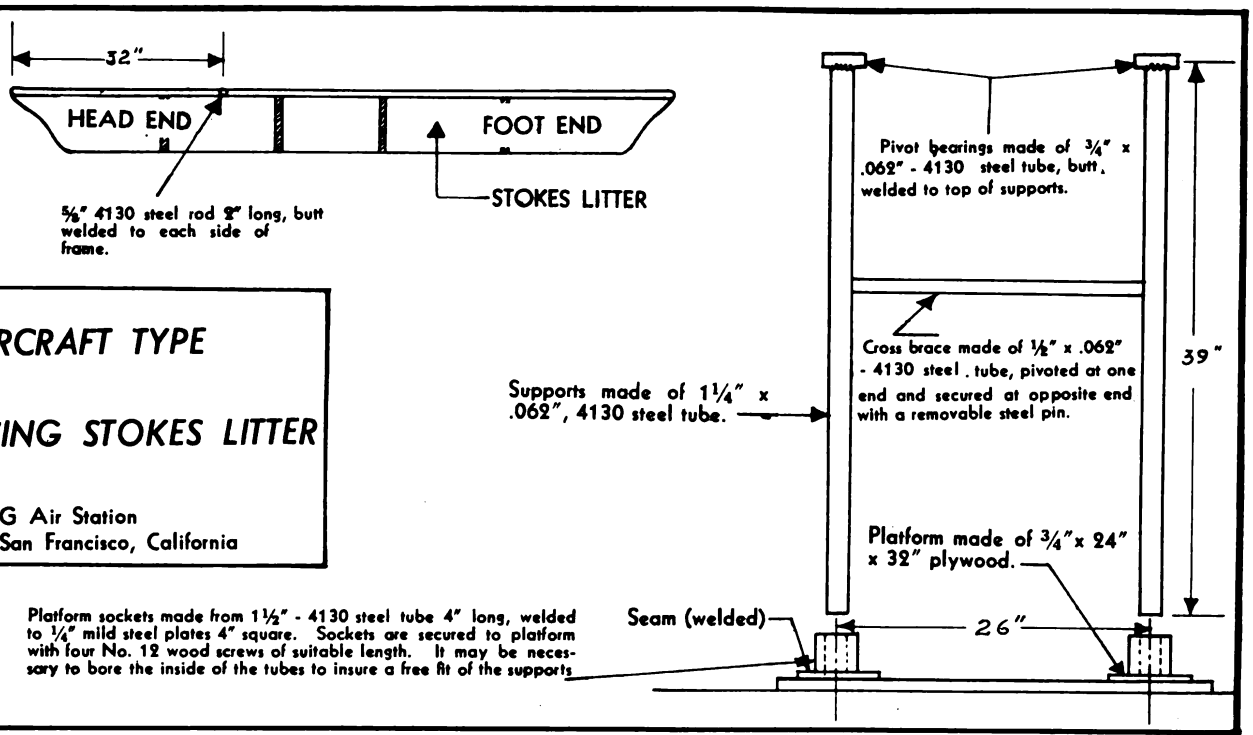
6. Tilted, head down. Note angle of tilt.



7. Tilted, feet down. Note angle of tilt.

Digitized by Google

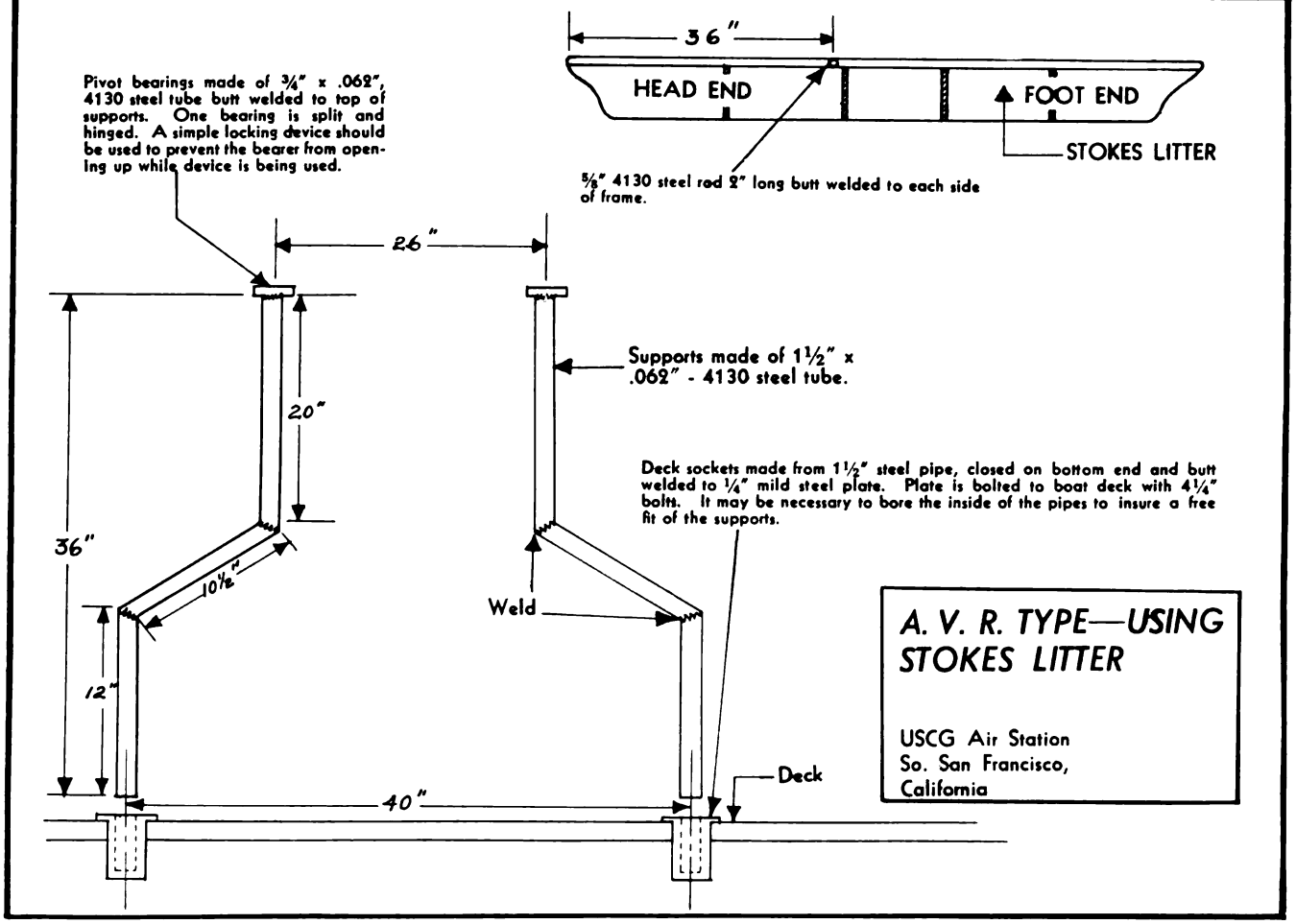
Original from UNIVERSITY OF MICHIGAN



AIRCRAFT TYPE

USING STOKES LITTER

USCG Air Station
So. San Francisco, California



A. V. R. TYPE—USING STOKES LITTER

USCG Air Station
So. San Francisco,
California

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

IMPROVISATION, USING MATERIAL ON HAND

Washington, D. C.

In the series of pictures, illustrations 8–13, can be seen an informal application of the Eve method in which a simple, seesaw apparatus has been rigged quickly and efficiently from materials on hand.

The Shaefer method of resuscitation for obvious reasons remains the technique of choice under ordinary circumstances. Anyone who has had first-aid instruction knows how to apply it. This method requires no apparatus and can be put into operation immediately.

However, the Eve method has been particularly adaptable for use on aircraft and aviation rescue boats because of the movement of the ship or plane and the limited space.

Additional advantages of the Eve over other methods, it has been pointed out by medical authorities, encompass the fact that any untrained man can assist after watching only a few moments. All water in the lungs is allowed to run out. Wet clothes can be cut off and warm blankets used without disturbing the artificial respiration. The victim is not harmed by bruising in the application of pressure. The Eve method is easier to work a long time if needed. Victims with fractures do not have to be disturbed. A greater amount of ventilation reaches the lungs—around 180 cc. more than in other methods.



8. Grabbing a handful of hair and towing victim to shore.



9. Making a fulcrum from two stones.



10. Victim's arms and legs tied to board; Shaefer method applied in interim.



11. Adjusting victim's head and ready to begin seesaw motion.



12. Tilting head down so that diaphragm will move forward.



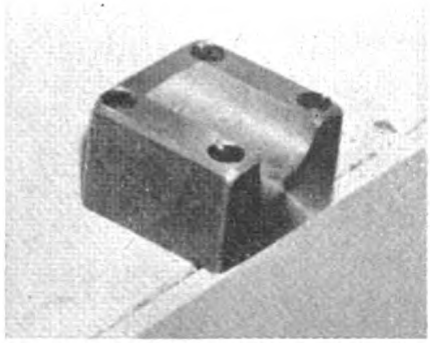
13. Tilting feet down, 45° angle, to cause diaphragm to move downward in body, sucking air into victim's lungs.

Digitized by Google

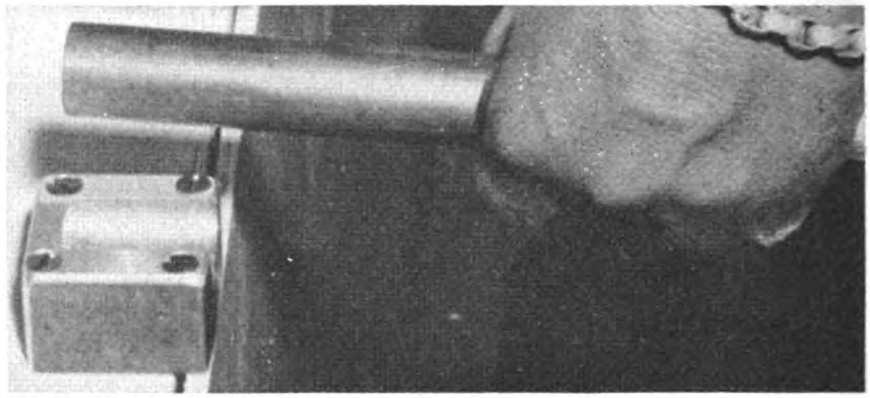
Original from UNIVERSITY OF MICHIGAN

MIAMI

Coast Guard Air Station, Miami, forwarded the four illustrations (14–17) for installing a fulcrum and Stokes litter on an AVR.



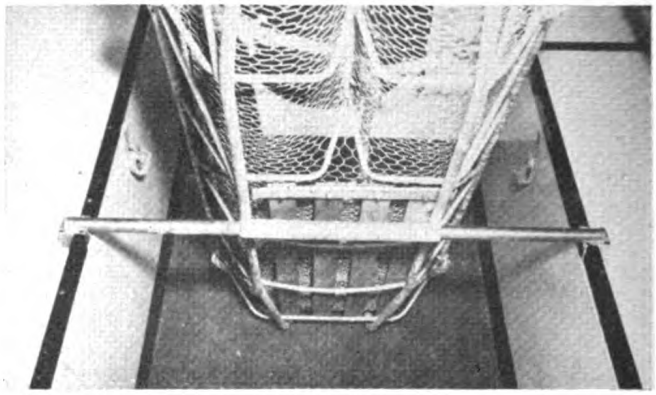
14. Seat for pivot rod.



15. Placing rod in seat.



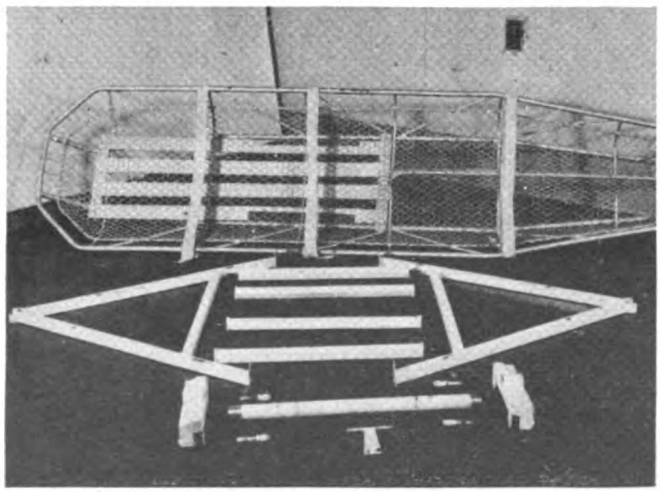
16. Placing rod in fulcrum.



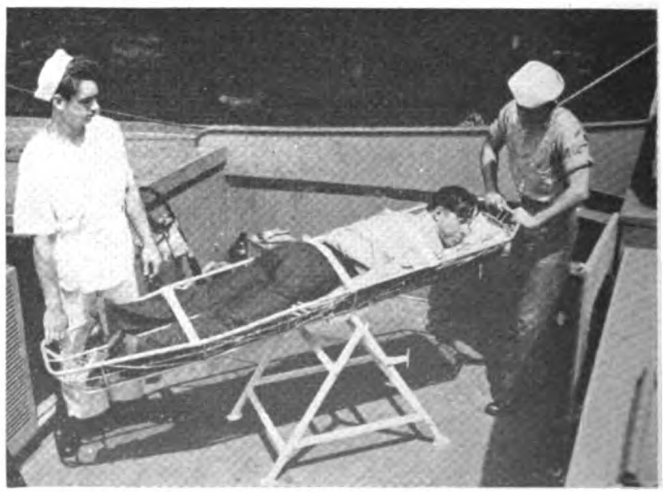
17. Stokes litter in place.

ST. PETERSBURG

Coast Guard Air Station St. Petersburg, Fla., has adopted the fulcrum shown in the photographs below (18–19) for use with the Stokes litter in administering the Eve method.



18. Fulcrum parts and litter.



19. Fulcrum assembled; patient receiving artificial respiration.

Digitized by Google

Original from UNIVERSITY OF MICHIGAN

PORT ANGELES, WASHINGTON

Illustrations 20–23 depict the manner in which Coast Guard Air Station, Port Angeles, Wash., has utilized the Stokes litter on board aircraft rescue vessels to apply artificial respiration by means of the Eve method.

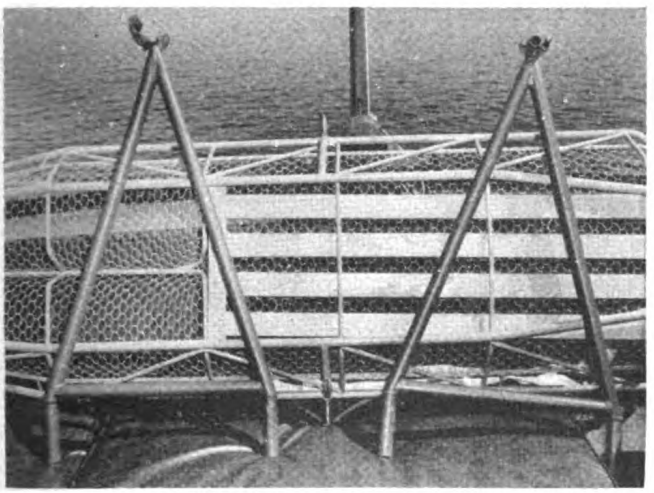
The Stokes litter has been modified by the welding of a pair of trunnions at the balance point on the top frames, and by an additional brace running between top and bottom frames. Two A frames were manufactured as shown in the photographs. These frames have a split and hinged bearing at the top into which the trunnions fit, allowing rotation of the litter around the horizontal axis formed thereby. Flush sockets were constructed and installed in the after cockpit deck hatch and in the sick bay deck hatch.

The A frames are supported in these sockets and elevate the entire arrangement above the deck, allowing for free movement in the vertical plane, within the limits of the frame's height. A special bearing was fitted to the rail at the top of the port bunk, thus allowing room for passage through the sick bay with litter installed, and necessitating use of only one A frame when litter is installed at that location (not shown in illustrations).

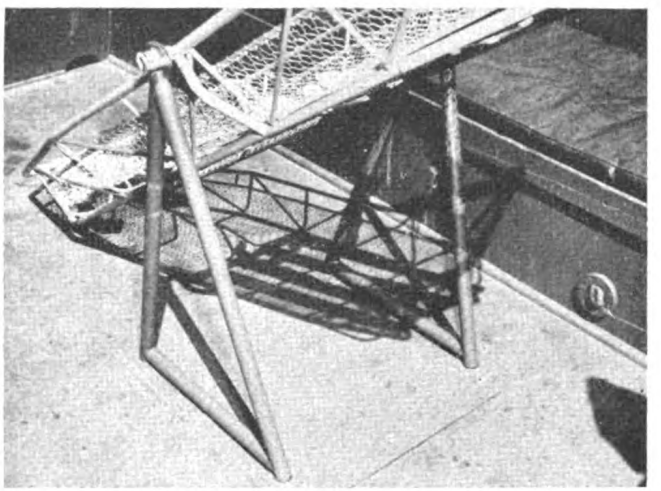
Similar sockets are to be installed in the sick bay of the air station so that artificial respiration may be continued either on the boat or in sick bay. Thus the patient may be removed without interruption of the process.

It will be noted that illustrations 22–23 were taken while the AVR was under way. There is no difficulty in administering the resuscitation under way. Note also that the straps securing the patient to the litter have very little tension, not enough to straighten the patient's knees. The back strap is not tight but prevents accidental movement of the patient on sudden pitching of the boat.

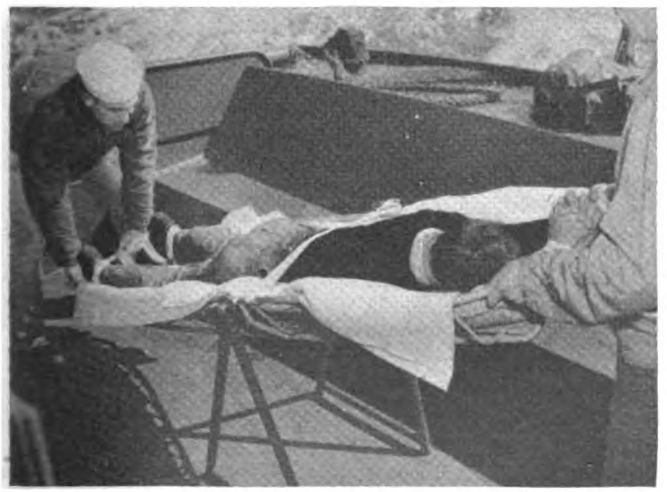
It is anticipated that all AVRs in the area will be equipped with this adaptation.



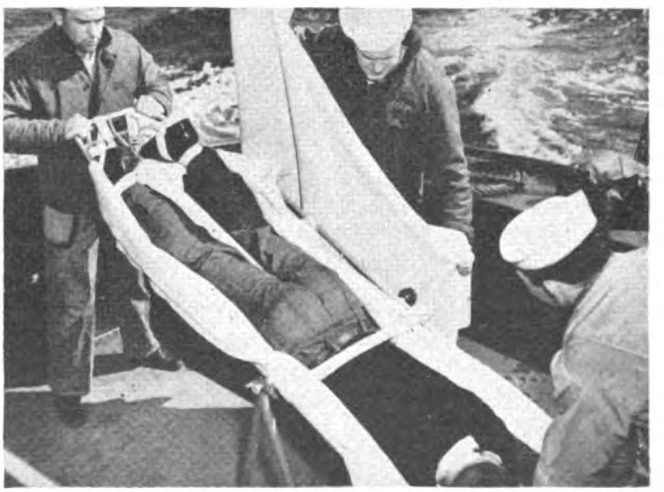
20. Two A frames and Stokes litter, which has been modified by the welding of a pair of trunnions at the balance point on the top frames.



21. Rig set up on board an AVR. An additional brace running between the top and bottom frames has been added to the Stokes litter.



22. Patient fastened securely to Stokes litter. Note blanket beneath victim's body. Boat is under way.



23. An additional blanket is placed over patient by a third man, with no interruption of artificial respiration.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Human Albumin Solutions

Administration of Albumin in Shock Cases Reported

When an injured person is suffering from shock there is a reduction of fluid in the circulatory system. The reduction in blood value is caused by the fluid seeping from the blood stream into the body tissues.

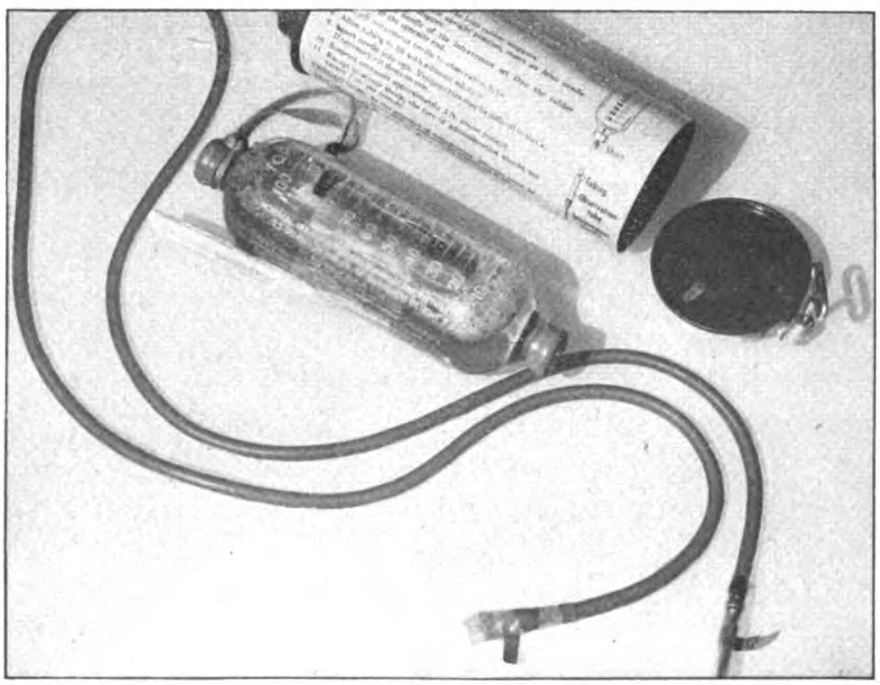
The *BuMed News Letter* of 22 June 1945 reports on the circulatory effects of human albumin solutions in patients with shock. The concentrated albumin was injected into 22 surgical patients suffering with hypotension and decreased circulation. Circulatory measurements were made before, 20 minutes after, and, in 11 cases, 2½ hours after the injection.

Results of the tests show that the albumen produced a decrease in the relative proportion of red cells in the blood stream due to an increase in plasma volume (less red cells per equal volume of fluid due to an increase in the total amount of fluid). This occurs because the albumin exerts an osmotic effect and draws fluid back from the tissues into which it has gone.

Although the blood pressure of the patients rose approximately 17 mm. Hg., it did not return to the accepted normal level. This confirms previous observations that changes in blood pressure are not an adequate index of the restoration of the circulation. In other words, in these cases, the circulation was satisfactorily restored although the blood pressures were still subnormal.

Navy Issues Compact Human Serum Albumin Package

The standard package of albumin for emergency treatment is only 5½ inches long and 2 inches in diameter. Requiring no mixing of the contents, the package contains a 100 cc. bottle of solution. This solution, whose active ingredient is 25 grams of human blood albumin, is the osmotic equivalent of 500 cc. of citrated blood plasma.



Standard package of Human Serum Albumin opened. Note cord secured to neck at top of bottle to facilitate hanging up or holding for administering contents. Rubber tubing, transparent observation tube and needles are included in the package.

When injected intraveneously, the 100 cc. of 25 per cent albumin draws approximately 350 cc. of additional fluid from the body tissues into the circulatory system within 15 minutes, except in cases of marked dehydration. The extra fluid reduces hemoconcentration (concentration of the solid constituents of the blood) occurring in shock.

Since the bottle of concentrated albumin can be administered in 3 to 10 minutes, it is preferable as the earliest treatment of shock. If dehydration is present, the administration of other fluids by any available route is desirable, either with albumin (two bottles of albumin per liter of solution) or after albumin. Even in marked dehydration, however, concentrated albumin is not harmful; it is merely less effective.

Normal human serum albumin may be given in conjunction with, or combined with, whole blood, plasma, saline, glucose or sodium lactate. It may be used in the emergency treatment of shock due to trauma, hemorrhage, operation and infection, or in the treatment of injuries of such severity that shock, although not immediately present, is likely to follow. An initial dose of one to two bottles can be followed in 15 or 30 minutes by a third bottle if the response is inadequate. Administration of larger quantities should be supplemented with, or replaced by, the use of whole blood to combat the relative anemia which would follow the use of three bottles of albumin (equivalent to 1,500 cc. of plasma).

The quick response of blood pressure which may follow the rapid administration of concentrated albumin necessitates careful observation of the injured patient to detect bleeding points which failed to bleed at a lower blood pressure.

ASR Task Units Outline Medical Treatment of Survivors

Two Air-Sea Rescue Task Units—Northern California Sector, WSF, and ComDelGroup, ESF—have issued similar outlines of medical procedure for survivors picked up by air-sea rescue boats and planes. These methods are printed for information and guidance of other units. The treatment outlined by the rescue task units to be known and followed by all personnel in the absence of a pharmacist's mate:

Preliminary Care

1. Make a quick survey of the degree of injury sustained by the survivor, and take the man aboard in accordance with directions issued for that purpose.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

2. All survivors *that have been in the water* will be placed in a reclining position in a Stokes litter and considered *bed patients* until a careful examination shows them to be uninjured. Under no circumstances will they be allowed to walk about the boat or plane, due to the likelihood of shock or pneumonia developing.

Outline of Treatment After Rescue

1. Unconscious Individuals.
   a. Any hemorrhage should be controlled by pressure compresses. If absolutely necessary, apply tourniquets.
   b. If patient has not been submerged, start treatment of shock immediately.
   c. If breathing has ceased, artificial respiration by the Eve method or Schaefer prone pressure method should be carried out until normal breathing starts or rigor mortis sets in.
2. Conscious Individuals.
   a. Any hemorrhage should be controlled.
   b. Treatment of shock started immediately.
   c. Burns dressed and fractures immobilized.

Diagnosis and Treatment of Common Aviation Type of Casualties

1. Drowning (an unconscious individual who has been submerged and is not breathing).
   a. Eve method of artificial respiration (described later). This is the method of first choice and is carried out in a Stokes litter, with the patient's face down, using 10–12 double rocks per minute.
   b. Schaefer's prone pressure method as described in the *Bluejacket's Manual*, 10–12 strokes per minute.

2. Shock (shock can be assumed to be present in any severe injury or long exposure. Fractures are very prone to cause shock).
   a. Diagnosis
      (1) grey pallor of face
      (2) weakness
      (3) thready pulse
      (4) cold sweat
      (5) restlessness or anxiety
      (6) partial or complete unconsciousness
   b. Treatment
      (1) place individual in reclining position with head lowermost.
      (2) keep warm with blankets.
      (3) give one morphine syrette if the patient is not unconscious.
3. Hemorrhage
   a. If severe, control immediately by closing wound with your hands, not stopping to worry about infection. If entire extremity is cut off, a tourniquet made of a tie, belt, etc., will be necessary.
   b. Pressure compresses usually will be adequate in small lacerations.
   c. If tourniquets are applied, loosen them very gradually every 15 minutes to see if the hemorrhage has stopped and to allow some blood to reach the remainder of the extremity. If bleeding is still present, allow it to spurt three times and re-apply tourniquet. In cases of accidental amputation, the tourniquet need not be loosened or removed.
4. Fractures: treat all fractures, even simple fractures of the arm, with patient lying down.
   a. Simple fractures where the skin is not broken usually can be immobilized by lashing the extremity in good position to the sides and bottom of the Stokes litter. Other splints can be devised and the Thomas leg splint can be applied to hip fractures.
   b. In compound fractures, sprinkle sulfanilamide powder into the wound after stopping the hemorrhage and apply a sterile dressing over it, immobilizing the part as in simple fractures *without setting the fractures.*
   c. In all cases, except suspected skull fractures, morphine syrettes can be given to control pain.
   d. Avoid all motion of the fractured part to prevent shock and to avoid making a simple fracture a compound fracture.
5. Burns.
   a. Sunburn and all other burns should be treated as open wounds, and no blisters or skin shreads should be disturbed or cleaned.
   b. Apply sterile dressings in open burns.
   c. Use morphine syrette for pain.
   d. Do not use tannic acid ointment on dressing. Use petrolatum or boric acid ointment instead.
6. General Procedures.
   a. Be conservative. It is much better to keep the patient in a sheltered position when it is unnecessary than to have to explain why he went into shock or developed pneumonia.
   b. Patient should be securely lashed to the Stokes litter when brought aboard and also when the Eve method of artificial respiration is used. The face down position in the Stokes litter, made at rescue, saves turning the patient over later.
   c. The emergency medical tag should be filled out and attached to the patient.
   d. In the absence of a pharmacist's mate, his duties should be assigned to a definite crew member who will then be responsible for the emergency medical tag and the medical log.
   e. In all cases, radio arrangements for adequate ambulance service should be made as soon as possible.
   f. KEEP THE PATIENT WARM.
   g. Avoid over-treating a patient. Your job is to render first aid only and to get the patient back to where further medical care is available.
   h. Never give an unconscious patient morphine.

Eve Method of Artificial Respiration

The Eve method of artificial respiration (see article, page 32) is well adapted to aviation type of casualties since there is no pulling, pressing, or moving the patient. More air is forced in and out of the lungs by this method than by either the Schaefer or Silvester methods, plus the fact that it is accomplished without hurting the patient.

This method should be continued until breathing is started or rigor mortis develops.

Summary.

a. Place patient in Stokes litter, face down.

b. Lash patient securely by tying arms and legs to the sides of the litter.

c. Place litter in rocking frame.

d. Tilt head down until all water is expelled from stomach and lungs.

e. Rock stretcher 10 double tilts per minute.

f. Continue until breathing starts or rigor mortis develops.

g. Keep the patient warm.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Boat Testing *(Cont'd from page 31)*

sessed by the arm-clutching method. For experiment in the cold water at Rockland, life size dummies were made and were the object of search, approach and rescue procedures. Believing that the net principle had merit, a metal net device was constructed, experimented with and refined. The principles involved are shown in the illustrations of figure 3. Some of the other ideas experimented with are pictured and are described below.

A vertical rack, originally developed for men to stand on when working over the side, proved to have further use in scooping men out of the water and onto the deck. This is shown in the photographs of figure 2.

Still another scheme consisted of the use of a lasso covered with rubber hose, but the results were not satisfactory and the idea was abandoned. (See article in AIR SEA RESCUE BULLETIN, Vol. I, No. 11, p. 11.)

The hydraulic crane, designed for use in conjunction with helicopter rescue work, was tested and will be improved in future tests.

Another idea involves a large basket (see fig. 1) made of pipe framework with steel netting. This may enable ships to pick up survivors afloat in rafts while a vessel is under way. Its depth can be controlled by means of vanes with which it is equipped. Further work is anticipated on this device, which should be of great practical value for larger vessels engaged in air-sea rescue.

The latest rig contemplated consists of an elevator type of platform which operates in slotted pipe guides. The raising or lowering is accomplished by a small winch. Survivor and raft can be floated on to the platform when it is in a lowered position and then be raised vertically to the deck level. Time did not permit the construction of this device while in the southern zone, but experimentation is contemplated.

New Gibson Girl *(Cont'd from page 26)*

The selector switch may be placed for manual keying, in which case any desired message may be transmitted, but only on the 500 kilocycles frequency.

The signal lamp may be used for visual communication by plugging in the cord attached to it in the SIGNAL LAMP SOCKET and turning the selector switch to the SIGNAL LIGHT position. The light is non-directional, and may be seen from any direction. For that reason, the lamp should be secured on top of the head, with the straps running under the chin. The light must be turned on manually by pressing on the push-button, KEY, and left on continuously or used as a blinker signal.

One record of use of the Gibson Girl concerns a flier forced down on a lake due to lack of fuel. His signal was picked up by a plane on routine flight at a distance of almost 90 miles. When sighted, he was on the east end of a lake and reported by command set that gas and oil were all that were needed to fly out. In this instance, rescue was accomplished because the downed pilot made use of his emergency transmitter which proved highly successful in enabling the patrol plane to home accurately over a considerable overland distance.

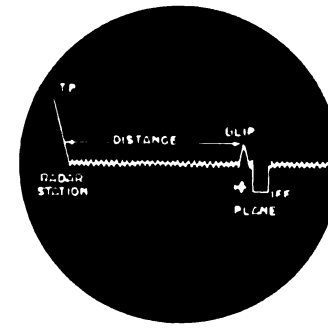
False Emergency IFF is Hazard to Other Airmen

All Emergency IFF signals are taken to be *true* emergencies, and for that reason are investigated immediately. Any pilot who wrongly turns on his Emergency IFF may cause a situation that can cost lives needlessly by tying up search and rescue equipment that may be needed for a known crash. The diverting of equipment to run down reports that later are determined as false deprives flying personnel of planned protection.

Many of the Emergency IFF reports received each month are found to be false. *MAYDAY in Action* tells that one rescue division alone reported that during the month of June, 102 out of the 119 Emergency IFFs were later determined as false. Not all false reports can be chalked up to the pilot, but enough offending planes are discovered to indicate that false IFFs caused by equipment failure are most unusual. That means only one thing—*the weak spot in Emergency IFF is the human element.*

The operation of the airborne IFF equipment requires no special training. The two main switches that activate it make operation about as difficult as snapping on a light switch at home. It is most important, however, that the pilot know WHEN to snap those switches. An outline of the principle of radar may make it easier to understand the pilot's responsibility in preventing false Emergency IFF signals.

Radar sends out pulses of high frequency electrical energy. The short wave length makes it possible to concentrate this energy into narrow beams. Any object in the path of this beam reflects energy back to the radar set in the form of an echo. The effect of this transmitted pulse and the returned echo are displayed in a cathode ray tube by means of a beam or bright line of light. When a radar pulse goes out, it causes the light trace to bend up into a sharp



peak at the left side of the tube—this sharp peak is the transmitted pulse made visible. When the echo returns, it causes a second response or peak in the light trace known as a "blip." (See illustration.)

Distances are determined by measuring the time between the transmitted pulse and the echo or "blip." Measurement of the time interval is done with great speed and accuracy and translated into distance. The transmitted pulse and the echo apply to all radar and IFF. Something more was required, however, to distinguish between friendly and hostile aircraft, since both would produce identical echoes. The identification is accomplished by placing another item of equipment in the aircraft which transmits a special signal back to the ground radar and enables the operator to identify the aircraft as friendly or hostile.

Turning on the emergency switch of the equipment in the aircraft causes a special distress signal to be transmitted, a signal that is easily recognized by all radar operators. This distress signal means trouble with a capital "T," and because it sets the rescue unit into action, it must be used *only for an emergency.* (*MAYDAY in Action*, 15 July 1945.)

U. S. GOVERNMENT PRINTING OFFICE 1946

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

COMMITTEES FOR AIR SEA RESCUE

1. Committee to Study the Preparation of Emergency and Survival Publications.

(Chm)	CG:	Lt. Comdr. J. H. Bell, USCGR, 1516 14th St., NW.	ADams 2003
	Army:	Maj. Thomas Dunn, AC, Room 4D 180, Pentagon Bldg.	Army 73050
	Navy:	Lt. Comdr. Norville E. White, USNR, 2W30 Bg-W, Navy Depart.	Navy 4038 or 62953

2. Committee to Study Adequacy of Air Sea Rescue Facilities.

A. (Chm)	CG:	Lt .Comdr. J. D. McCubbin, USCG, 1516 14th St. NW.	ADams 2003
	Army:	Maj. T. J. Borgman, AC, Room 4D 180, Pentagon Bldg.	Army 73538 or 71629
	Alt:	Maj. William J. Small, AC, Room 4D 180, Pentagon Bldg.	Army 73538
	Navy:	Lt. C. W. Brown, USNR. Room 1634 Temporary S. Bldg., 5th and Independence, SW.	Navy 61178

3. Committee to Study the Communication Facilities and Requirements for Air Sea Rescue.

(Chm)	CG:	Commodore E. M. Webster, USCG, Room 7300, CG HQ.	Navy 4444
	Army:	Maj. J. M. Sherman, AC, Room 4D 180, Pentagon Bldg.	Army 4847
	Alt:	Maj. T. J. Borgman, AC, Room 4D 180, Pentagon Bldg.	Army 73538 or 71629
	Navy:	Comdr. C. L. Harding, USCG, 2542 Navy Depart.	Navy 63636

4. Committee to Study Special Aircraft Equipment for Rescue and Survival.

(Chm)	CG:	Lt. Comdr. W. G. Davis, USCG, 1516 14th St. NW.	ADams 2003
	Army:	Capt. Wilfred Hines, AC, Room 4D 180, Pentagon Bldg.	Army 74687
	Alt:	Capt. Knute Flint, AC, Room 4D 180, Pentagon Bldg.	Army 73538
	Navy:	Lt R J. Willingham, USNR. 2W32 Bg-W Navy Depart.	Navy 62292 or 62953

5. Committee for Life Saving Equipment on Transports.

A. (Chm.)	CG:	Comdr. M. de Martino, USCG, 1516 14th St. NW.	Adams 2003
	Alt:	Lt. George A. Gyland, USCG, 1516 14th St. NW.	AD 2003
	Army:	Major G. L. Johnson, Room 1E 668, Pentagon Bldg.	Army 72207
	Army:	Mr. Phillip E. King, 3C 738, Pentagon Bldg.	Army 4665
	Navy:	Lt. Comdr. J. L. Caillouet, Jr., USNR, Rm. 2011, Bg-T5, Navy Depart.	Navy 4575

6. Committee to Study the Medical and Physiological Aspects of Air Sea Rescue.

	CG:	Sr. Surgeon Paul A. Neal, USPHS, National Hygiene Research Lab., National Institute of Health, Bethesda, Md., Room 12.	WIscon 7000 Ext. 148
	Alt:	Surgeon J. C. Grier, USPHS Room 7220, C. G. HQ.	Navy 3283
	Army:	Capt. Charles R. Tittle, Office of Surgeon General, Room 422, 1818 H St. NW.	Army 76122
	Army:	Col. William F. Cook, Office of Air Surgeon, Room 4C 174, Pentagon Bldg.	Army 6487
	Alt:	Lt. Col. J. K. Mack, Office of Air Surgeon, Room 4C 226, Pentagon Bldg.	Army 73379
(Chm)	Navy:	Comdr. Owen W. Chenault (MC), USN, Room 2941A Navy Depart.	Navy 2732
	Alt:	Lt. Comdr. Henry A. Schroeder (MC), USNR, Room 2941A Navy Depart.	Navy 2732
	Navy:	Comdr. M. H. Goodwin, (MC), USN, Rm. 1817, Navy Depart.	Navy 5946.
	Alt:	Capt. John H. Korb (MC), USN, Room 28, Pot-Ann Bg-3.	Navy 4171
	RAF:	Wing Comdr. S.R C. Nelson, 1424 16th St NW.	DE 9000 Ext 94.

7 Committee to Study Ditching Procedures
Membership of this committee is being revised.

1 May 1945

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Digitized by Google
Original from
UNIVERSITY OF MICHIGAN

AIR SEA RESCUE Bulletin

VK
1300
A2

RESTRICTED

Vol. II, No. 1
SEPTEMBER, 1945



Information contained herein is assembled from various United States and foreign sources; it is disseminated in this Bulletin for information only to a limited list of addressees with interest in the field of air sea rescue. It will be apparent that the Bulletin may contain information which does not represent the policy of the Air Sea Rescue Agency or the Services represented on the Board for Air Sea Rescue.

Published monthly by the United States Coast Guard for

AIR SEA RESCUE AGENCY

NAVCG 128

WASHINGTON, D. C.

Digitized by Google
Original from
UNIVERSITY OF MICHIGAN

AIR SEA RESCUE AGENCY

R. R. WAESCHE, Admiral
U. S. Coast Guard

ROBERT DONOHUE, Rear Admiral
U. S. Coast Guard

BOARD FOR AIR SEA RESCUE

C. H. FAITH, *Colonel*, U. S. Army Air Forces
J. W. BURGARD, *Colonel*, U. S. Army Air Forces
W. J. RENN, *Lieutenant Colonel*, U. S. Army Service Forces
JAMES R. DUDLEY, *Captain*, U. S. Navy
P. K. WILL, JR., *Commander*, U. S. Navy

Executive Staff for Air Sea Rescue

W. A. BURTON, *Commander*, USCG, Executive Assistant
W. B. SCHEIBEL, *Commander*, USCG, Secretary of the Board
J. H. BELL, *Lieutenant*, USCGR, Chief of Information Section

Special Duty Staff Officers, Air Sea Rescue Agency

C. M. MURPHY, *Major*, AC, Army of United States
RUSSELL E. PIERCE, *Captain*, USMCR
E. J. SANGER, *Lieutenant*, USNR

AIR SEA RESCUE LIAISON OFFICERS

R. L. BURKE, *Commander*, USCG
Air Sea Rescue Liaison Officer
Commander Eastern Sea Frontier
90 Church Street
New York 7, N. Y.

A. E. HARNED, *Commander*, USCG
Air Sea Rescue Liaison Officer
Hut 33
Staff Commander, 7th Fleet
Fleet Post Office
San Francisco, Calif.

R A. BAXTER, *Commander*, USCG
Air Sea Rescue Liaison Officer
% Commander Gulf Sea Frontier
Dupont Building, Room 936
Miami, Fla.

T. J. HARRIS, *Commander*, USCG
Air Sea Rescue Liaison Officer
% Commander Western Sea Frontier
Federal Office Building, Room 469
San Francisco 2, Calif.

A. J. DEJOY, *Commander*, USCG
Air Sea Rescue Liaison Officer
Air Sea Rescue Unit
Naval Air Base, Navy 3245
% Fleet Post Office
San Francisco, Calif.

D. O. REED, *Commander*, USCG
Air Sea Rescue Liaison Officer
Coast Guard Box #1, Navy 48
% Fleet Postmaster
San Francisco, Calif.

O. D. WEED JR., *Commander*, USCG
Air Sea Rescue Liaison Officer
% Commander, Alaskan Sea Frontier
Fleet Post Office
Seattle, Wash.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Documents Expediter
JUN 13 '49

NOTE ON BULLETIN DATE AND NUMBERING

With this number, the *Air Sea Rescue Bulletin* begins its second year of publication. It will be noted that this issue—Volume II, Number 1—is dated September, 1945, whereas the last issue was dated June. This has been done to make the date on this and future *Bulletins* coincide with the months in which they are distributed and received by those in the field. No July or August dates will be used for the current year.

ADDRESS VERIFICATIONS REQUIRED

In accordance with United States Bureau of the Budget Circular A-16, the Air Sea Rescue Agency is checking the distribution list for the *Air Sea Rescue Bulletin.*

A letter has been sent to each addressee. In order to remain on the list, addressees must reply immediately, requesting continuation. Those from whom such requests are not received will be removed.

If your copy of the *Bulletin* is received through your chain of command instead of direct from the Agency, the request for continuation should be made to the distributing authority which forwards your copy. For those addressees who receive multiple copies for further distribution to units under their command or control, notification is required not only in cases of change of address, but also for revision in number of copies needed.

Each addressee should note the distribution list code number which appears at the center of the bottom line of the address on the envelope or package covering *Bulletins.* The number is always prefixed by the two code letters which are:

AR—Army	MS—Miscellaneous
CG—Coast Guard	NA—Navy
FO—Foreign	SM—Marine Corps

It is requested that this code number be used in all communications regarding the *Bulletin.*

CONTENTS

EQUIPMENT AND FACILITIES

	Page
Cloth Charts Bring Survivors Back	2
Oxygen Equipment Aids Escape from Submerged Aircraft	7
AAF Technical Order Directs Application of Corner Reflector Mast Supports	10

TRAINING AIDS AND PUBLICATIONS

AAF Emergency Rescue School, Keesler Field, Miss	12
Publications Catalogued in Air Sea Rescue Agency Library	15
Marine Aviation Survival Training	17
Parachutes	22
Survival—A Selected Bibliography	24

HEALTH AND MEDICAL

Flight Surgeon's Notes on Pacific Rescues	24
Precautions Outlined for Eating Shellfish	25
Proper Position of Shoulder Holster Prescribed	26
Drinking Sea Water	27

METHODS, PROCEDURES, AND TECHNIQUES

Emergency Entry into Aircraft for Rescue Operations	28
RCAF Displays Emergency Equipment	29
Air Station Devises Line Faking Board	36
Air Sea Rescue Agency Adds New Exhibits	37
Radio Discipline Sense—Book Review	38
Navy TOs and TNs Relating to Air-Sea Rescue Equipment	40

This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, 50 U. S. C., 31 and 32, as amended. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

Communications to AIR SEA RESCUE BULLETIN should be addressed:

AIR SEA RESCUE BULLETIN
Air Sea Rescue Agency
1516 Fourteenth Street NW.
Washington 5, D. C.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Cloth Charts Bring Survivors Back

Chart and mapping development comes only with the need for specific items. To try to trace the origin of many types of charts is difficult, since most of them seem just to have "growed." The printing of maps and charts on cloth has worked wonders for airmen, and while it is next to impossible to ascertain their exact origin, production in the United States has gone ahead by leaps and bounds, with distribution a tribute to cooperation and inter-service coordination.

It seems probable that the first cloth maps were produced by the British or Australians. Due to the extremely difficult problem of printing, they were principally outline maps in one or two colors. Aussie pilots wore their charts around their necks as scarves or—cowboy fashion—as neckerchiefs. In this way, the maps became a part of their apparel on each mission, and were not likely to get lost under any conditions.

Army and Navy charts are available for use to both services. Within the United States, today's charts are produced principally by the Army Air Forces (Aeronautical Chart Service), with information supplemented by the Navy. The AAF distribution began in 1943.

Naval Air Combat Intelligence commenced distribution of handkerchief charts for South Pacific Island groups and adjacent waters, since operations then centered in that area. The expansion of the chart program paralleled but preceded the northward trend of Pacific Fleet operations. In addition to AAF cloth charts, 26 NACI charts of western Pacific areas are available to operating personnel.

The cloth chart's first reason for existence came from the flier's urgent need to have some means of finding his way (if forced down) by means of a map he could carry on his person. The bulk and easy destructability of paper made it impractical for a survivor either at sea or making his way cross-country. Cloth was the answer to the problem, for it could be worn around the body or stuffed conveniently in a pocket.

Other considerations came to light as time went on, and some of the features incorporated into the physical make-up of cloth charts now include resistance to mildew, imperviousness to water, strength, perfect readability. A special fabric is used—principally nylon but also containing small amounts of both rayon and cotton. This specially treated fabric is made to take a beating so that it can help its owners out of tight pinches regardless of conditions under which the material has been used.

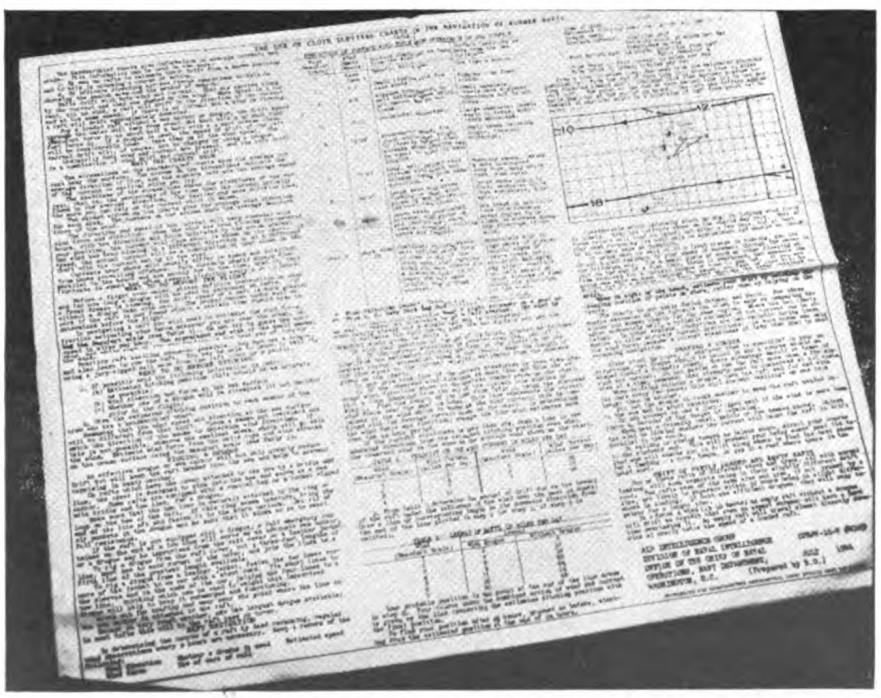
With the difficult problems of manufacture and printing, many of which are hand operations, the production process is slow and expensive. For this reason, distribution is handled in the field and is narrowly limited to those who actually need the charts. The charts are in color to emphasize the various features. Some are printed in as many as 7 basic colors, producing up to 17 distinct shades.

Early in the evolution process, small-scale rubberized charts for life rafts and lifeboats were printed. These are the standard Hydrographic Office Pilot Charts covering the five oceans—North Atlantic, South Atlantic, North Pacific, South Pacific and Indian Oceans—and are used by the AAF as well as the Navy. They provide lifeboat survivors with a chance to navigate their small craft, and in addition supply wind and current data.

Army cloth charts required by the Navy are ordered from the AAF for distribution as required. The list covers every operational area:

AAF CHARTS

Key No.	*Title*
4	Tyrol.
6	Balkans.
7	Mediterranean France.
8	Lyon Torino.
16	Owen Stanley.
17	New Britain.
18	Papua.
19	Nassau.
20	Amboina.
21	Halmahera.
23	North Celebes.
24	South Celebes.
25	Timor.
22–26	Southwestern and Eastern Java.
27	Madang Lae Wau.
28	Wewak-Madang-Mount Hagen.
30	South Burma.
31	North Burma.
32	French Indo China.
33	Central China.
34	Southeast China.
35	Northeast China.
C 36	Central East Asia.
C 37	Korea.



"The Use of Cloth Survival Charts in the Navigation of Rubber Rafts" is the title of this "handkerchief" which furnishes information valuable to the survivor who has had to ditch or bail out over water.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

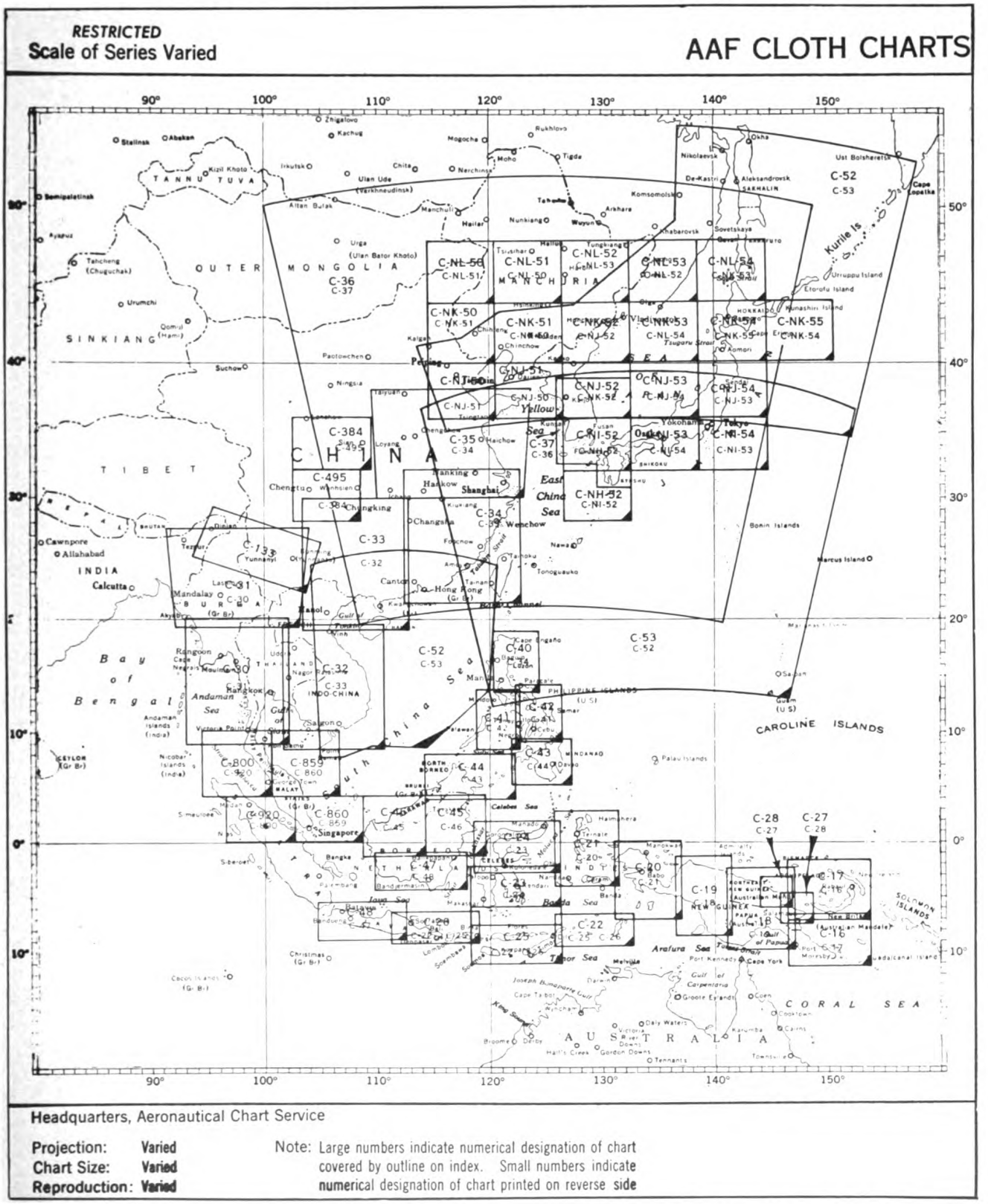
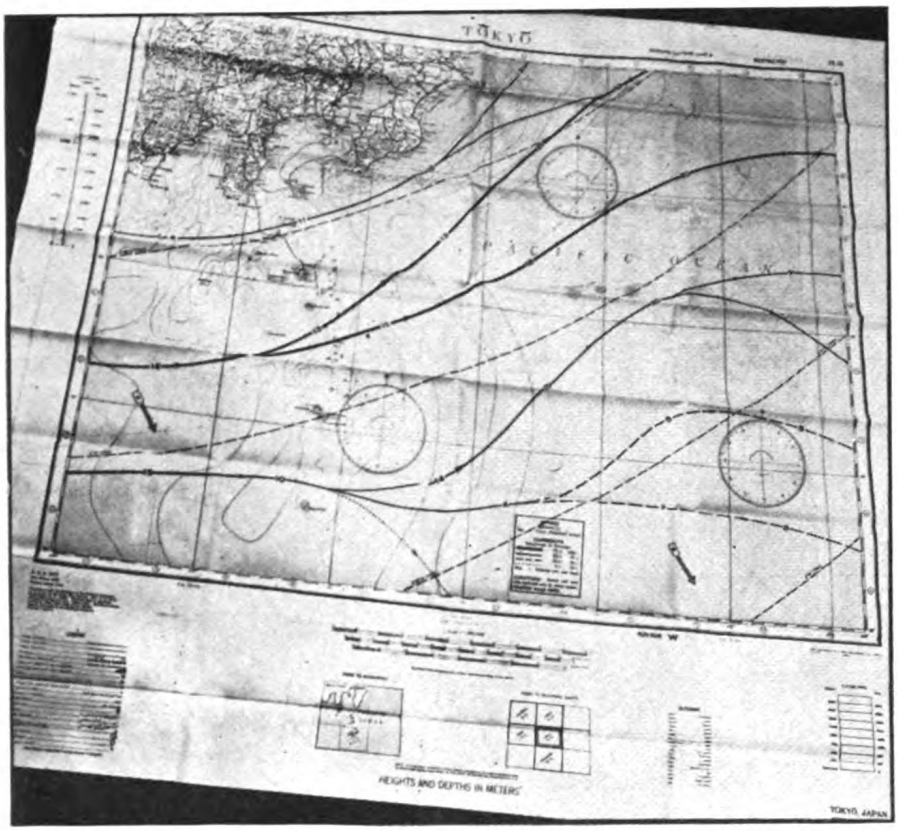
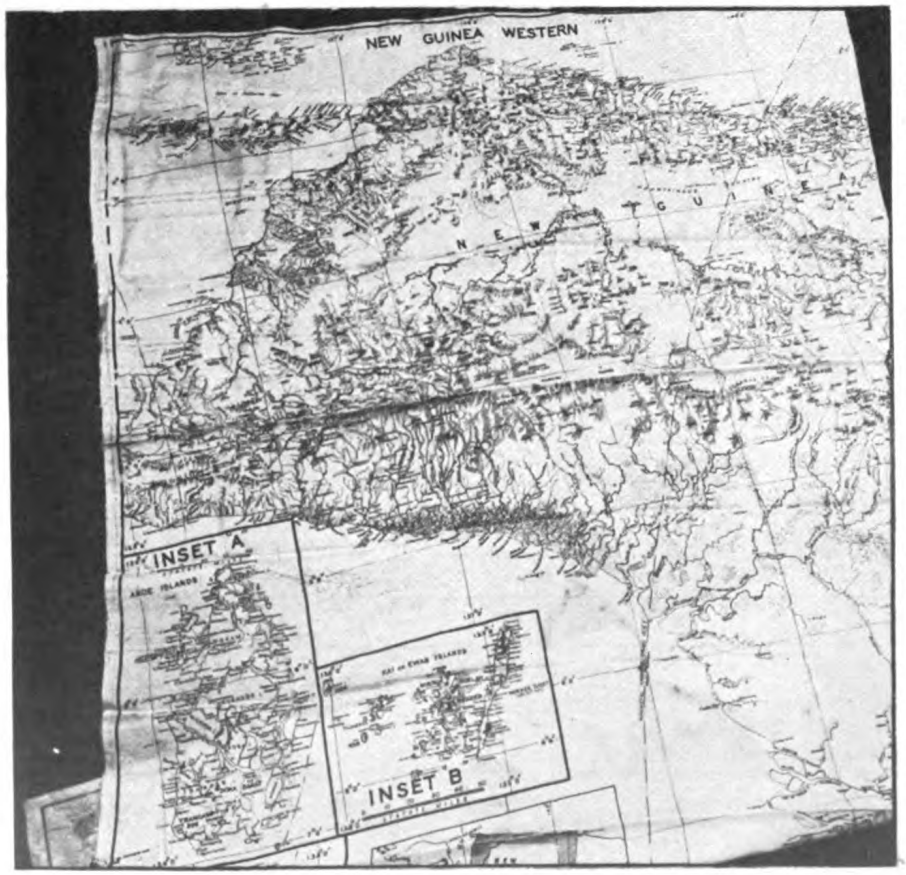


Chart Index showing areas for which the AAF has made charts. Others are available for certain European and South American areas.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN





Key No.	*Title*
C 34----	Southeast China.
C 40----	Luzon Island.
C 41----	Mindoro Island.
C 42----	Samar Island.
C 43----	Mindanao Island.
C 44----	North Borneo.
C 45----	East Borneo.
C 46----	West Borneo.
C 47----	South Borneo.
C 48----	West Java.
C 50----	British and French Guiana.
C 51----	Northeastern Brazil.
C 52----	Japan and South China Seas.
C 53----	East China Sea.
C 60----	Pacific Ocean.
C 61----	Atlantic and Indian Oceans.
NH 52---	Kagoshima (Front).
NI 52---	Hagasaki (Back).
NI 53---	Osaka (Front).
NI 54---	Tokyo (Back).
NJ 50---	Pei'-Ping.
NJ 51---	Ryojun.
NJ 52---	Keijo.
NK 52---	Vladivostok.
NJ 53---	Kanazawa.
NJ 54---	Sendai.
NK 50---	Jehol.
NK 51---	Shen-Yank.
NK 53---	Vladunuri-Aleksandrovskove.
NL 54---	Otomari.
NK 54---	Hakodate.
NK 55---	Nemuro.
NL 50---	Buir Nor.
NL 51---	Tsitsihar.
NL 52---	Harbin.
NL 53---	Spassk-Dal-Niy.
133------	Kun-Ming to Chabua.
C 384----	Wei River.
C 495----	Omei Mt.
C 800----	We Island.
C 920----	Nias Island.
C 859----	Penang Island.
C 860----	Bintan Island.

NAVY CHARTS

Key No.	*Titles*
S12–20 and 16.	New Hebrides and Loyalty Islands.
S12–9 and 26.	Fiji and Tonga Islands.
S12–8------	Ellice Island (Summer).
S12–11-----	Gilbert Islands (Summer).

(Above) Chart production keeps pace with the movement of the operational war. This one gives airmen the details of Tokyo!

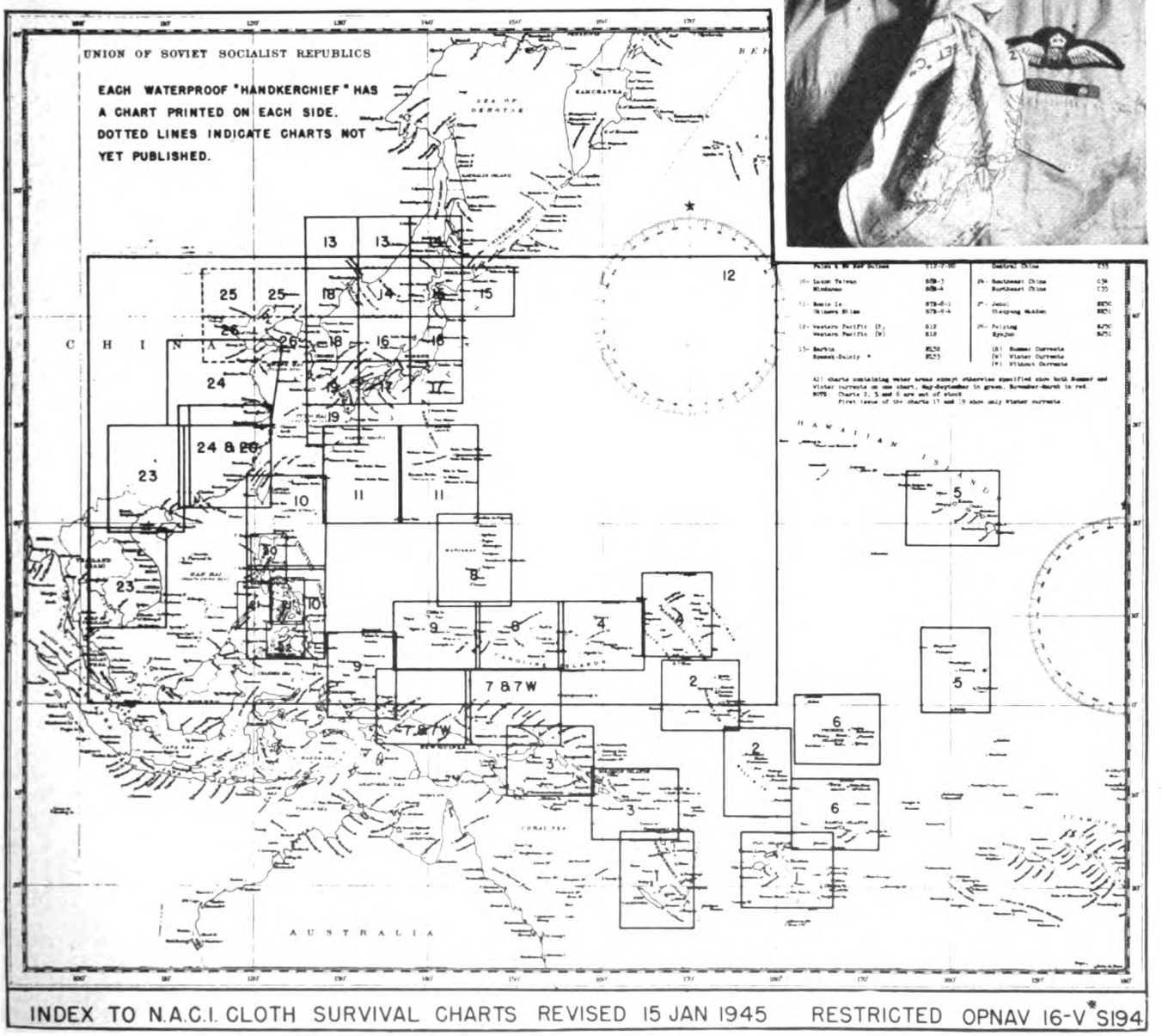
(Below) An Australian chart printed in two colors on parachute silk. It shows good detail, and is lighter in weight than those made in the United States. There is very little duplication of areas mapped since the Australian charts cover areas in the Southwest Pacific in their own field of operations and not thoroughly covered by USAAF or Navy charts.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Key No.	*Title*
S12–1 and 25.	Bismarcks and Northwest Solomons.
S12–23 and 25.	Southeast Solomons and Santa Cruz Islands.
S12–32____	East Caroline Islands.
S12–19____	Marshall Islands.
S12–12____	Southeast Hawaiian Islands (Summer).
S12–14____	Upper Line Islands (Summer).
S12–21____	Phoenix Islands (Summer).
S12–29 and 22.	Union Group and Samoa Islands (Summer).
S12–1–1____	Admiraltys and Northwest Bismarcks (Summer).
S8A–10–1__	North Central New Guinea (Summer).
S8A–10–1__	North Central New Guinea (Winter).
S12–1–1____	Admiraltys and Northwest Bismarcks (Winter).
S12–17____	Marianas Islands.
S12–2–36___	Central Caroline Islands.

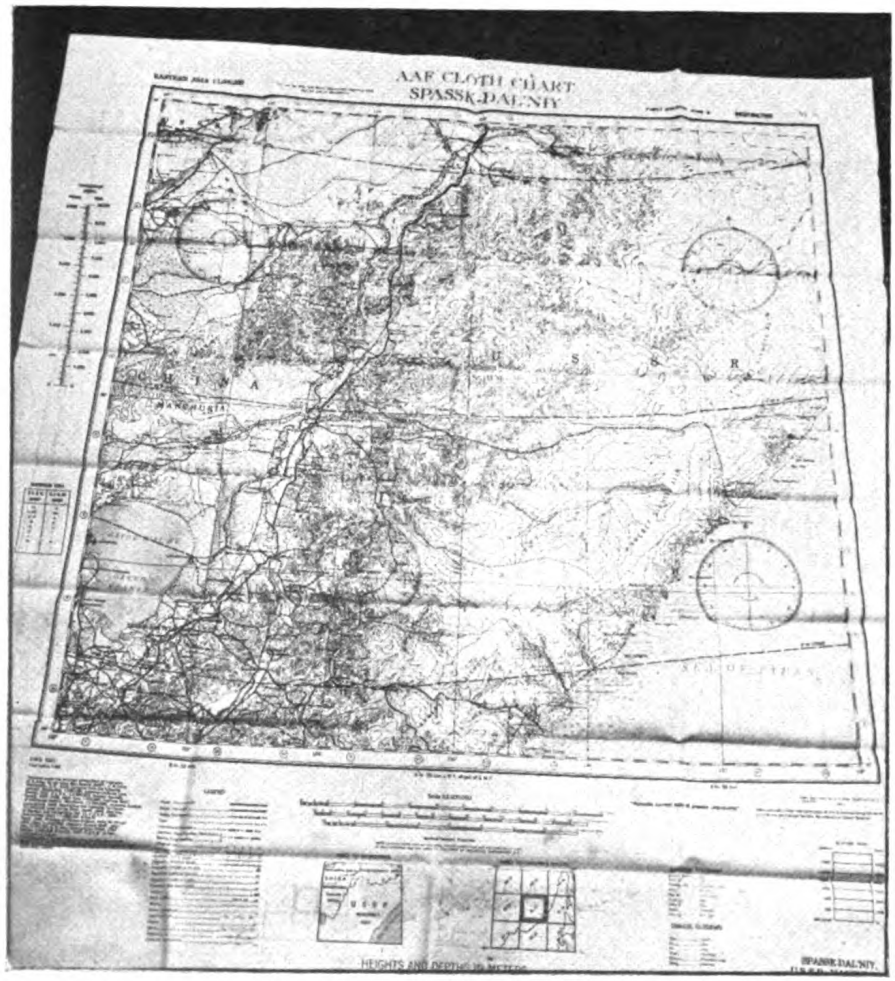


(Right) Silk survival map worn as a scarf by an Australian Spitfire pilot.
(Below) Navy Chart Index, outlining areas covered by handkerchief maps and others printed by the U. S. Navy.



INDEX TO N.A.C.I. CLOTH SURVIVAL CHARTS REVISED 15 JAN 1945 RESTRICTED OPNAV 16-V*S194

Digitized by Google
Original from UNIVERSITY OF MICHIGAN





(Above) This AAF map combines road information with locations of towns, their populations, rivers, telegraph lines, land contours, railroads, compass variation, local mean time and depths of the sea offshore.

(Below) Rubberized lifeboat ocean chart. These are made for the five major ocean areas; were probably the first step toward today's cloth survival charts.

Key No.	*Title*
S12–2–40	Western Caroline Islands.
S12–2–20	Palau and Northwest New Guinea.
S8B–3	Luzon Taiwan.
S8B–4	Mindanao.
S7B–8–1	Bonin Islands.
S7B–9–4	Okinawa Shima.
S12	Western Pacific (Summer).
S12	Western Pacific (Winter).

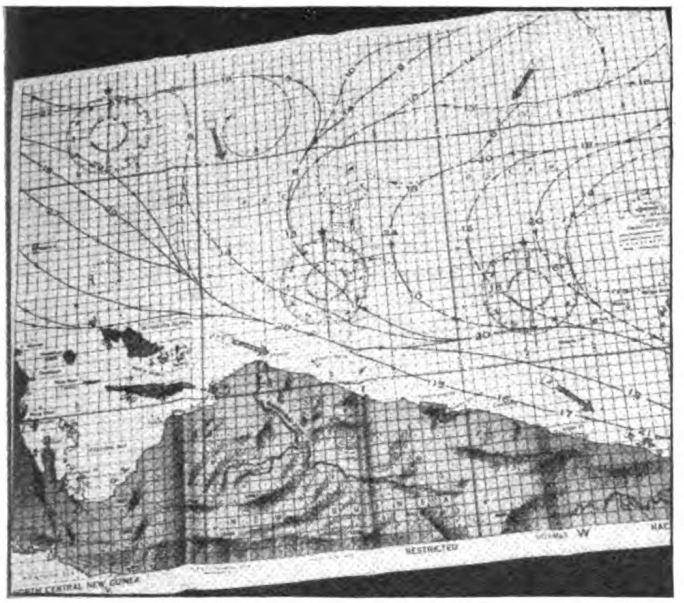
Every effort is made to supply the latest information, together with all types of data which possibly might be of value to the survivor. All of this not only enhances the survivor's chances for returning safely, but also is a major factor in boosting morale and confidence of flight personnel. Each one of these cloth charts represents some flier's chance to outwit the sea or jungle; therefore the distribution is so carefully confined.

The source of information in preparing the land maps and charts is derived chiefly from best available information. In addition to this general information, work is constantly in progress to expand existing information and improve the accuracy of the material. This comes in the form of reports, aerial photography, improved information, etc., which is received by the aeronautical chart service. Further, the Hydrographic Office of the Navy supplies details of wind and currents at sea to aid the raft survivor in navigation. This data is not the same during the entire year, so a color-code system has been devised to break it down for average summer and average winter conditions. Formerly it was necessary to print a summer map on one side of the cloth, and a winter one on the other but the color code makes it possible to incorporate the information on one side, leaving the other side to be used for a different chart.

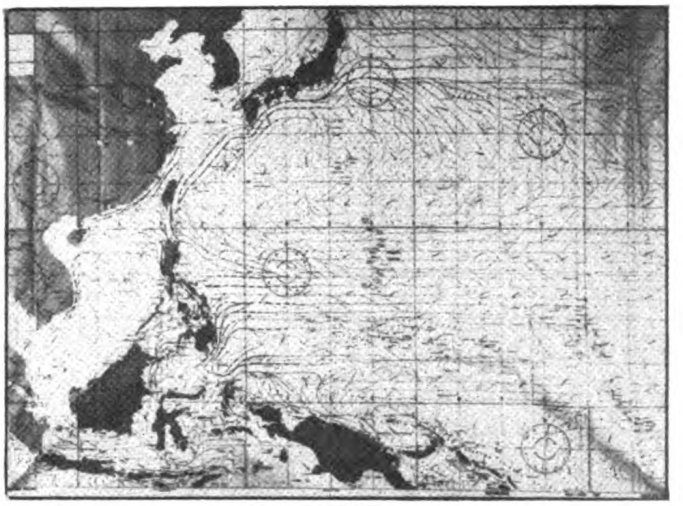
Navy "handkerchief charts" get their name from their size, which is only about 13 by 16 inches. They are made on standard Mercator projections, while the Army charts vary somewhat in size and projection, depending on individual area requirements. The AAF charts are approximately 22 by 29 inches in size.

That developmental efforts are paying dividends is evidenced by the praise of hundreds of survivors who have come back, many of whom report that the intelligent use of their cloth charts brought them safely through.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN



(Left) A Navy handkerchief chart of North Central New Guinea.
(Below) Winds and currents of the Western Pacific are printed on this small-scale chart for the raft or lifeboat navigator.



OXYGEN EQUIPMENT AIDS ESCAPE FROM SUBMERGED AIRCRAFT



Standard portable walk-around assembly used in submersion tests. (A-13 regulator and A-14 oxygen mask.)

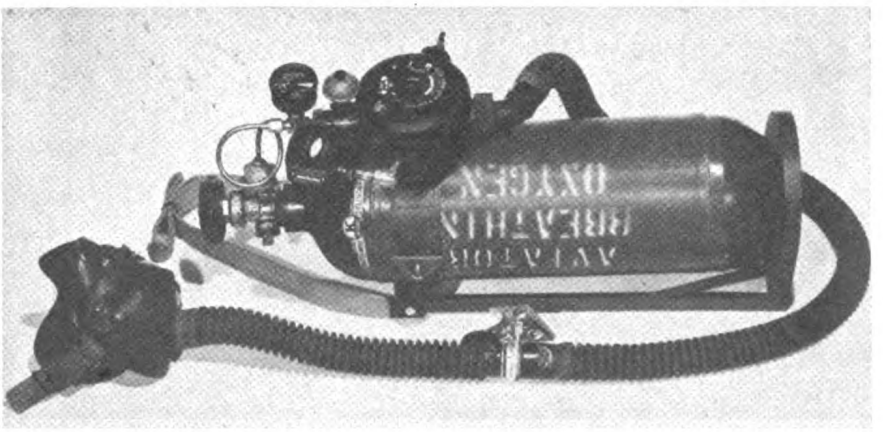
Reports of incidents of submersion, and actual or suspected drowning of personnel after ditching of bombardment-type aircraft, have indicated that there are many instances where the ditched aircraft continued to float for many minutes, even though the fuselage was partially or completely submerged. If crew members were not injured seriously when the plane hit the water, the use of portable oxygen equipment might materially increase their chance of escape. For this reason specialists of the Army and Navy began examining the possibilities of this new use for oxygen masks and assemblies. The findings of the two services are included in this composite article.

NAVY FINDINGS

A possible manner of self-rescue for those who must come out from below the water's level of a ditched plane has been the subject of experimentation by the Navy Bureau of Aeronautics. A series of preliminary tests conducted at the diving chambers of several testing agencies indicate the practicability of the procedure.

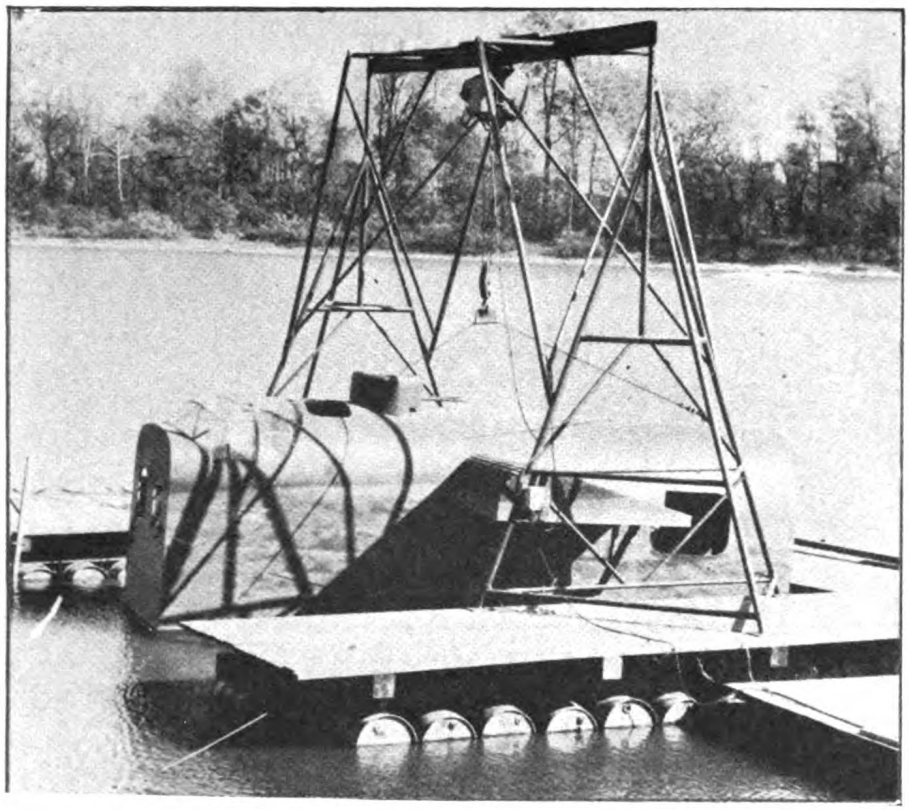
This self-rescue for naval airmen is based on using a standard Navy individual oxygen diluter demand unit which was introduced for transport and utility (VR–VJ) airplanes to comply with Technical Order 116–44. The assembly consists of the following items: one portable oxygen cylinder carrier, one oxygen cylinder, a diluter demand regulator, mask-to-regulator tubing and an oxygen mask. The most important feature is the portability of the whole assembly.

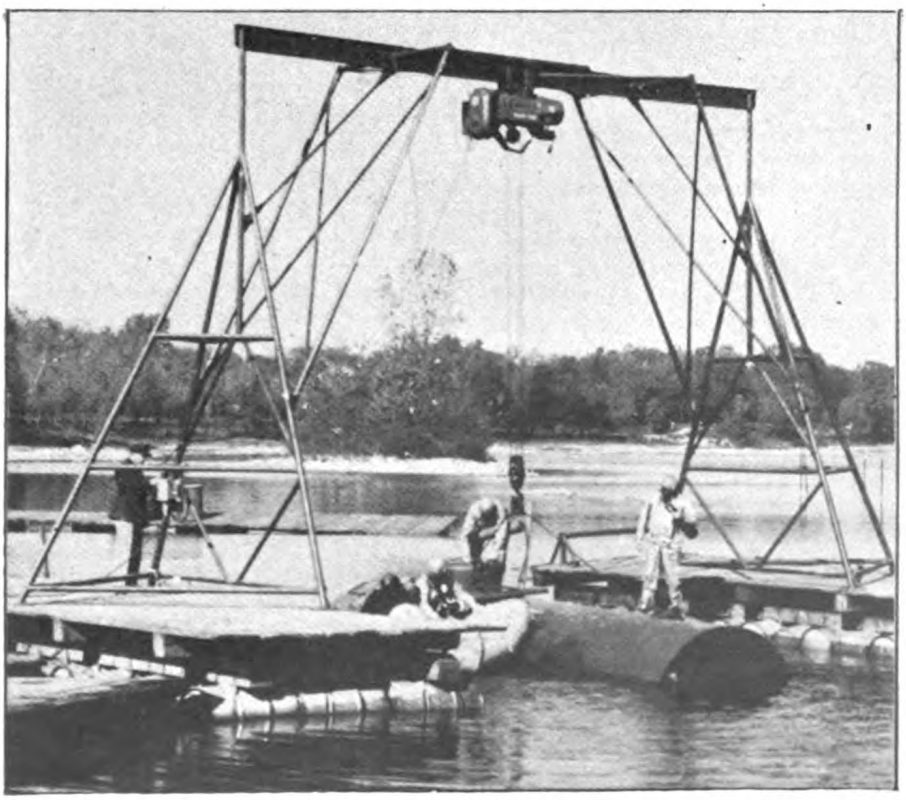
When a utility plane is ditched, all personnel can don their oxygen masks, turn the oxygen cylinders on, set the air valve levers on the regulators at



Standard Navy walk-around assembly. (AN-6004-1 diluter and A-14 oxygen mask)

Digitized by Google
Original from UNIVERSITY OF MICHIGAN





(Above) Mock-up B-24 fuselage and apparatus used in submersion tests. (Below) Submersion apparatus in operation.

the "off" (or 100 percent oxygen) position and begin breathing 100 percent oxygen on demand. Then, the hatches may be opened and the fliers' escape achieved as shallow-water divers.

The immediate objection raised by the uninitiated is carrying the weight of the unit, but this is allayed by the fact that the whole unit has neutral buoyancy. Since it tends neither to sink nor float, it can be held in position with one arm, leaving the other for pulling oneself free of the plane and swimming to the surface.

It is important to hold the regulator properly for maximum efficiency. The regulator diaphragm should be held on the same level as the exhalation valve of the mask. Preliminary reports reveal that if the regulator diaphragm is held approximately 6 inches or more *below* the level of the mask exhalation valve, a continuous flow of oxygen will result. Also, when the diaphragm is held 4 inches *above* the mask exhalation valve, a restriction in flow is noticed, and as the regulator diaphragm ascends higher than the mask valve the flow will decrease to no flow. The regulator must be properly positioned if it is to function as a straight demand unit.

At 20 feet, using a 295-cubic-inch cylinder at only 1,475 pounds per square inch, a diver got 12 minutes of oxygen. In another 20-foot dive, by the use of a 96-cubic-inch cylinder filled to 1,650 pounds per square inch, the oxygen lasted 5 minutes. With a simulated pressure of 50 feet, a dive was made with a 295-cubic-inch cylinder at 1,390 pounds per square inch and the oxygen lasted 9 minutes. All the dives were made under water and considerable work was simulated each time.

For those who use this manner of self-rescue, it is suggested that after escaping from submerged aircraft, ascent be made at as slow a rate as possible and still maintaining upward motion, provided the oxygen supply has not been exhausted. During the ascent respiration should continue at a normal depth and rate. Under no circumstances should the escaping aviator hold his breath during ascent. If the oxygen supply becomes exhausted before or during the ascent, the ascent should be accompanied by continuous, slow exhalation, enough to prevent a sensation of fullness or distention of the lungs.

Though a full 295 cubic-inch-cylinder lasts approximately one hour at sea level

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

under normal breathing conditions, the length of functional time under water is considerably less depending on water pressure, which increases with depth. This, together with abnormally large respiratory demands, accounts for the short durations obtained from the cylinders. Despite the relatively short endurance of the oxygen supply as shown above, it should be sufficient as it is estimated that only 2 or 3 minutes are required to escape from a submerged airplane.

An experimental program has been initiated by BuAer to determine the possibility of using fixed oxygen equipment for underwater escape from ditched planes. Depending upon the findings of this investigation, a future article in the AIR SEA RESCUE BULLETIN will describe any helpful conclusions which may be reached on this subject.



"Survivor" breaks water during test from mock-up. The buoyancy of the assembly aids in surfacing.

ARMY FINDINGS

Usefulness of the AAF's walk-around oxygen equipment in permitting aircrews to breathe while escaping from a submerged plane forced down at sea has been demonstrated by specialists at the Air Technical Service Command's Aero-Medical laboratory at Wright Field. Captain Kulesz, chief of the laboratory's oxygen dispensing and servicing equipment unit, successfully demonstrated that the ordinary demand-type oxygen equipment could be used. He clamped on a standard A–14 oxygen mask and, using the type A–13 demand regulator and type–D cylinder, completely submerged himself in a swimming pool.

These first findings were later confirmed by more elaborate tests conducted at the Experimental Diving Unit, Navy Yard, Washington, D. C. This same assembly showed satisfactory performance at water depths to a maximum of 50 feet. The oxygen supply, affected by the pressure of the water, decreased proportionately with the increase in water depth. Approximate durations obtained during these tests were 6 minutes at a water depth of 10 feet, 5 minutes at 20–25 feet, and 3½ minutes at 50 feet, based on a pressure drop of 350 pounds per square inch (400 to 50 pounds per square inch) in the Type D–2 cylinder. Use of this walk-around assembly in water deeper than 50 feet is considered practical but duration of oxygen supply is decreased with greater depths, and there is a possibility of adverse physiological effects of breathing pure oxygen under increased pressure conditions.

The portable oxygen walk-around assembly is secured to the person by a sling assembly (AAF Drawing No. 43C16427). The head and arm are passed through the loop of the sling so that the cylinder rests in the armpit of the user. The two waist straps of the sling are fastened, anchoring the assembly, preventing it from getting away from the user because of its buoyancy, and permitting free use of both arms. Under water it is recommended that the regulator be maintained normally at approximately the same level as the face mask, but the user may vary the level of the regulator manually to increase respiratory comfort.

Procedure recommended for aircrews by the Aero-Medical laboratory directs the men to don the portable oxygen equipment as soon as they are braced in ditching position in the plane. They are to connect the regulator to the face mask just before the plane hits the water, and are warned to hold securely to a strong structural part of the plane. This will prevent the inrushing water and the buoyant cylinder from tossing them against protruding objects of the plane or from being buoyed to the overhead of the aircraft, which would present a potential hazard, particularly in escaping from larger aircraft.

A new walk-around assembly, installed in production aircraft as of April, 1945, consists of an A–15 diluter demand regulator and an A–6 cylinder which may be utilized for underwater emergencies by holding the palm of the hand over the air diluter. Though some water may enter the regulator through this port, it is felt that the quantity would not be sufficient to prevent the assembly's use during the first few critical minutes. Action, however, is being taken by the Aero-Medical laboratory to eliminate such leakage, as well as to provide a greater flow of oxygen since at present the oxygen metering port in the regulator is controlled by an aneroid and is partially closed at ground level.

If walk-around cylinders are not available, standard type A–12 and AN 6004–1 diluter demand regulators installed in the airplane may be used. With the diluter control turned to the "off" (100 percent oxygen) position and the emergency valve open, the submerged man is supplied with enough oxygen to permit him to release other equipment and move to the nearest hatch. He then can escape by holding his breath and disconnecting from the oxygen supply, a method that lends itself well for fighter planes. (*Air Surgeons Bulletin; Aviation News; Air Force.*)

655866—45——2

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Technical Order Directs Application of Corner Reflector Mast Supports

To provide for the support of the mast furnished as a part of the radar emergency signaling equipment, all type C–2, AN–6520 and AN–6520–1 one-man life rafts are to be modified to incorporate mast support patches in accordance with instructions contained in AAF TO No. 04–15–11, stamped: "Immediate Attention—Compliance with these instructions is MANDATORY in continental United States. In overseas theaters, compliance will be at the discretion of Air Force commanders concerned."

All type C–2 rafts manufactured after 1 March 1945 are to have the provisions of this technical order incorporated by the contractor prior to delivery. Production rafts will have a tag affixed indicating compliance with the order. One-man rafts in stock will be modified prior to issue.

Instructions for accomplishing this work:

1. Remove the raft from the pack and inflate, exercising caution not to damage the raft by over-inflation (2 pounds per square inch maximum), rough handling, or rubbing on rough, uneven floors.

2. Position the mast guide patch, part No. 45B9114, and mast antenna socket patch, part No. 45B9113 (figures 1 and 2), on the right side as shown in figure 4. To assure that the mast guide patch, part No. 45B9114, and the mast antenna socket patch, part No. 45B9113, are in proper position, pass the end of a wooden stick or rod through the loop of the mast guide patch, part No. 45B9114, and into the mast antenna socket patch, part No. 45B9113, adjusting it so that the rod is perpendicular to the bottom of the raft.

Sketch outline of patch on rail and floor using a soft lead pencil. *Do not puncture the raft fabric.* Position the antenna wire anchor patch, part No. 45B9115 (figure 3), on the rail at the foot end as shown into the sketch. This patch is applied in production on C–2 rafts. Mark the position of the patch as previously mentioned. Brush any dirt or soapstone from the area and wipe lightly with a cloth moistened in unleaded gasoline or mild solvent, such as benzine.

3. Deflate the raft.

NOTE.—To prepare light cement, thoroughly mix a quantity of new undiluted cement (*proper mixing is absolutely essential*), with equal quantities of cement and solvent and stir well. One quart of thinned cement is ample for 16 patches. Cement will be suitable for use for approximately 8 to 10 hours. Thickened or coagulated cement may be thinned by adding solvent and stirring until the original viscosity is obtained.

4. Apply five coats of light cement to the patches and the raft, allowing each coat to dry thoroughly before applying another. The last coat must be slightly tacky. Position each of the patches individually as outlined above. Affix one edge. Stitch down and proceed stitching over the remainder of the patch. Allow the cement to cure 24 hours at 70° F.; then soapstone on the patch, and the excess cemented area and repack the raft in accordance with the applicable instructions. Airmen must indicate compliance with this technical order by proper entry on the reverse side of the serviceable parts tag, Form No. 49, attached to the raft pack.

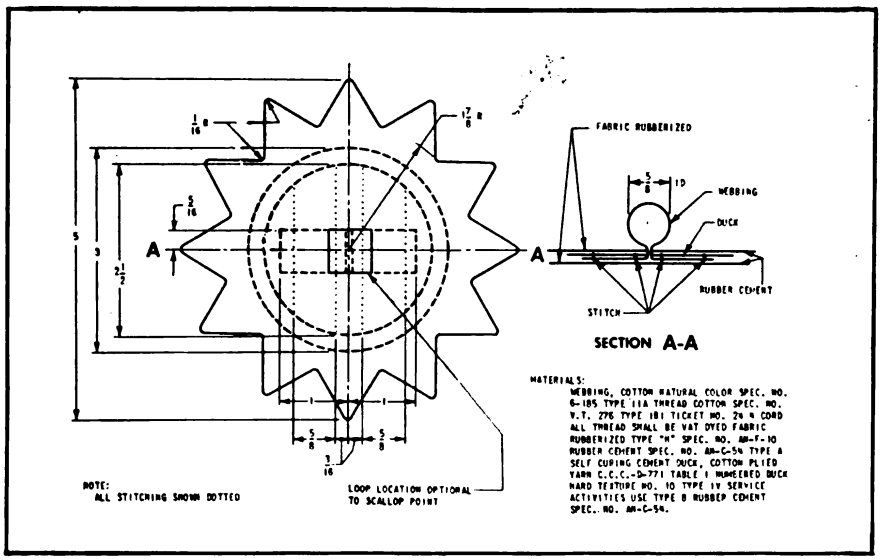


Figure 1.—Life raft mast guide patch.

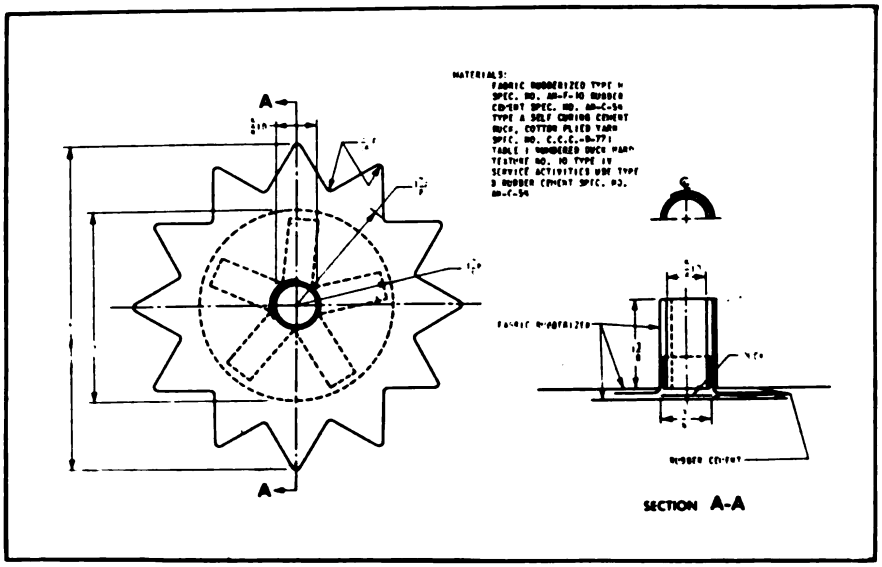


Figure 2.—Life raft mast antenna socket patch.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

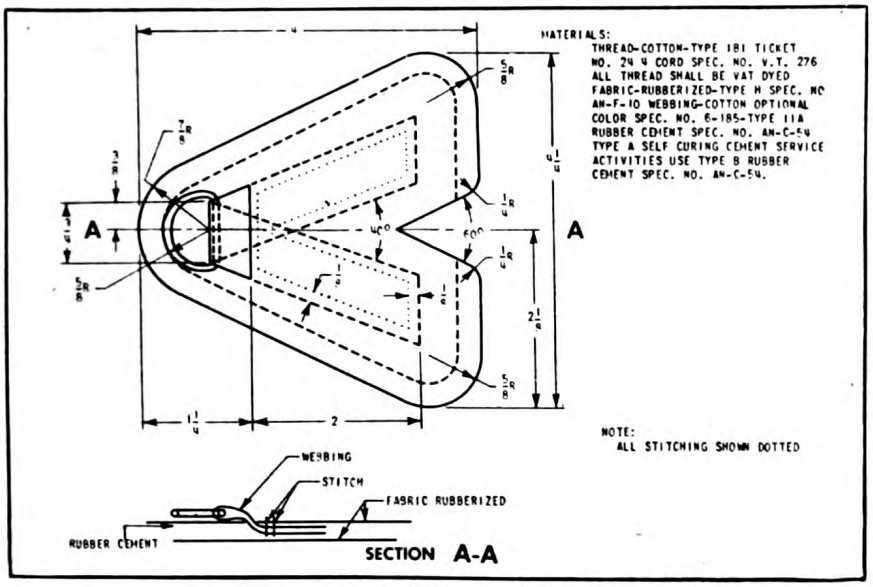


Figure 3.—Life raft antenna wire anchor patch.

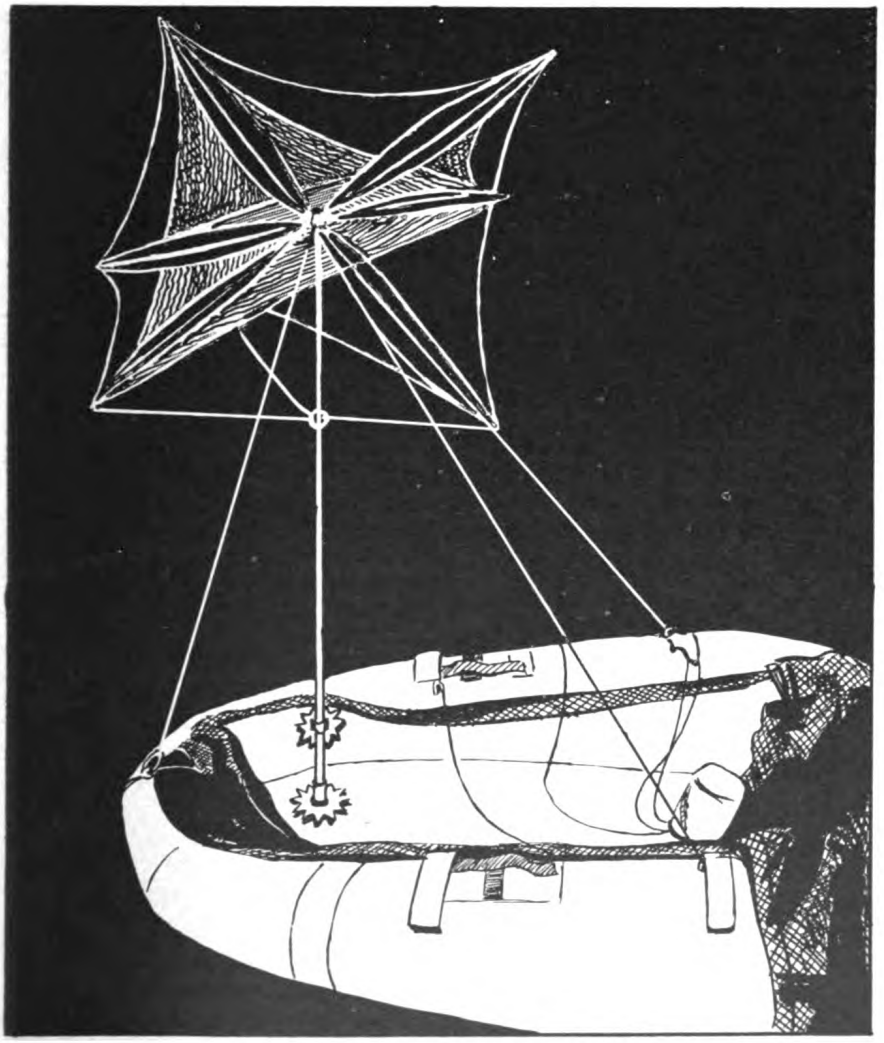


Figure 4.—Patches applied and reflector in position.

AAF Lists Emergency Aircraft Equipment

Headquarters, AAF, Air Technical Service Command, Wright Field, has listed emergency equipment, in addition to parachutes, carried in Army operational and training aircraft. (Note: AIR SEA RESCUE BULLETIN No. 7 includes an insert detailing emergency equipment carried by Navy planes.)

Very Heavy Bombardment Aircraft.—Two E–2A (six-man) life rafts and one SCR–578B radio are carried in the life raft compartments. One additional life raft, Type A–3A (four-man) is carried inside the fuselage. Each crew member is equipped with one B–4 or B–5 life vest and one C–2 one-man life raft. Emergency sustenance kits may be requisitioned and carried in the aircraft as specified by the air force commander concerned.

Heavy Bombardment Aircraft.—Two E–2A life rafts are carried in the life raft compartments. Each crew member is equipped with a B–4 or B–5 life vest. When authorized by the air force commander, each crew member is equipped with a C–2 life raft. One SCR–578B radio is carried inside the fuselage.

Medium Bombardment Aircraft.—One E–A2 life raft is carried in the life raft compartment. One SCR–578B radio transmitter is carried inside the fuselage. Each crew member is equipped with one B–4 or B–5 life vest. Type C–2 one-man rafts are worn when authorized by the air force commander concerned.

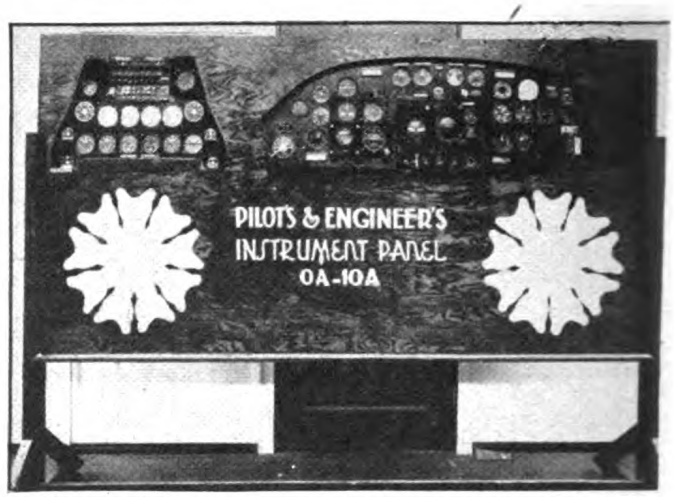
Transport Aircraft.—A sufficient number of E–2A and A–3A life rafts are carried to accommodate passengers and crew. One SCR–578B radio is carried. Each crew member and passenger is provided with one B–4 or B–5 life vest.

Fighter Aircraft.—Pilot is equipped with a B–4 or B–5 life preserver and C–2 one-man life raft.

The component parts of the equipment mentioned can be found in the AIR-SEA RESCUE EQUIPMENT GUIDE published by the Air Sea Rescue Agency.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN





Effective methods of instruction are used at Keesler Field in which students learn by doing and by seeing. Photo on left shows men receiving basic dinghy instruction. Right: Complete panels provide means for teaching students.

AAF EMERGENCY RESCUE SCHOOL

Established to train air and marine crews to search for and rescue AAF personnel who have been forced down or have bailed out, either over land or water, the Emergency Rescue School at Keesler Field, Miss., is a service school of the Army Air Forces. This detailed outline contains both a history of the school and a description of the tactical employment of air-sea rescue units.

HISTORY

Air and marine elements which were fused to comprise the school at Keesler Field were developed separately. Marine training was begun at New Orleans AAB in February, 1943, in a unit designated as the 1007th QM Rescue Boat OTU, under the supervision of the Air Quartermaster. Crews trained were designated as QM emergency rescue boat crews.

Marine training became an Air Corps function in November, 1943, and was transferred to the training command. Early in 1944 the marine training unit was moved to Gulfport Field and became a part of the provisional AAF Emergency Rescue Training unit. Training facilities were set up at the marine base, formerly Gulfport Yacht Club, and at the East Pier in Gulfport, Miss. The first organized air training was at Hamilton Field, Calif., and later moved to Boca Raton, Fla. Air training was initiated at Keesler Field in March, 1944.

During the next month, air and marine organizations were fused into the 2121st AAF Base Unit, comprising the AAF Emergency Rescue School under the Eastern Flying Training command, with headquarters at Keesler Field. Training was conducted in this unit until the last of July, 1944, when it was deactivated and the entire program became a function of Keesler Field under the Western Technical Training command, where it now functions.



Recognition is an important part of the Keesler Field training. Here a three dimensional display helps in the identification of ship and plane.

Since its beginning, the AAF Emergency Rescue School has trained and activated many marine crews, some of which are now in theaters of operations and, according to reports received, are performing valuable service. Boats used are principally 104-foot, 85-foot, and 63-foot AAF emergency rescue boats. Recently, marine training has been discontinued because needs were filled.

The first tactical group of air crews in operation consisted of three PBYs. Pilots were trained at Pensacola and Jacksonville between March and May, 1943. This group saw 8 months of action in the Mediterranean between June, 1943, and February, 1944, and performed a total of *56 rescues*. The pilots who returned to this country are at present instructors in the Emergency Rescue School.

Four PBY crews comprised the second tactical group in operation. Pilots received a total of 4 hours of training under Consolidated aircraft test pilots in February, 1943, and first saw action in the southwest Pacific in August of that year. This group was subsequently relieved by other emergency rescue squadrons after having accounted for *more than 50 rescues* in the Pacific, in addition to flying numerous other missions. Some of the personnel of the group are assigned to the Emergency Rescue School permanently.

The First Emergency Rescue Squadron was trained at Boca Raton, Fla.,

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

between December, 1943, and February, 1944. The squadron arrived in the European theater in April, 1944; from then until December, 1944, the group performed *240 rescues*, exclusive of rescues effected by surface craft with the assistance of squadron OA-10As.

Personnel, excess to the needs of the First Emergency Rescue Squadron, reported to Gulfport Field in February, 1944, joining with the marine section to form the Emergency Rescue School. The Second, Third and Fourth Emergency Rescue Squadrons were activated subsequently and trained at Gulfport Field and Keesler Field. Squadrons are at present in action in the south and southwest Pacific, and have jointly accomplished more than *200 rescues*. In addition to these squadrons, many replacement PBY crews have been trained by the Emergency Rescue School, Keesler Field, and other crews have been trained for the Air Transport Command.

TACTICAL EMPLOYMENT OF AIR-SEA RESCUE UNITS

Organization

After graduating from the school, air crews and/or squadrons are assigned to the air forces in the various theaters of operation. Currently, air forces operating in the Pacific have set up independent air-sea rescue commands or groups. For example, the organization of the Fifth Air Force includes a Bomber Command, Fighter Command and a Composite Emergency Rescue Group. Air-Sea Rescue Groups are further broken down into squadrons, flights and individual elements. Their tactical employment is as follows:

Group.—The group, which may consist of one or more squadrons, receives its orders directly from the Air Force. Group headquarters is advised of strikes, special missions, air lanes to be patrolled, etc., by Air Force headquarters, and takes necessary action on deployment of squadrons on missions as directed.

Squadron.—The air-sea rescue squadron operating directly under Group headquarters is organized customarily under TO&E 1-987 or some variation thereof. Tactical employment will be subject to the control of group headquarters, which is under the command of the air force. Squadron headquarters will direct the tactical employment of the various flights in compliance with directions from group headquarters.

Flight.—Each squadron normally contains three or more flights, physically deployed at various bases, as the tactical situation in the theater dictates. Usually one flight is located at the same base as squadron headquarters. Other flights are based as the general situation warrants, to permit their most effective tactical employment in air-sea rescue operations.

Element.—Individual elements or crews may be separated physically from the parent flight or squadron organization as the situation demands. Generally, however, elements are based with a flight although their tactical employment probably will require individual operational missions.

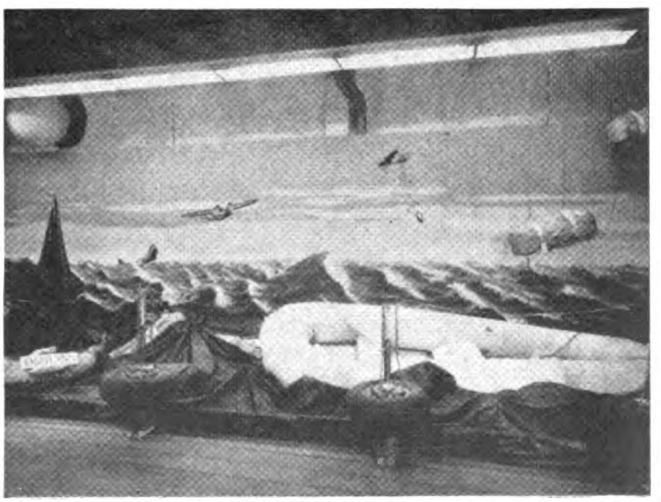
Mission

The primary mission of air-sea rescue units in theaters of operation is to search for, rescue, and return to base the combat crews forced to ditch or bail out over land or water in the accomplishment of tactical missions. To execute this mission, the following tactical employment of air-sea rescue units has been made:

Strikes.—Upon receipt of information relative to a contemplated bombing mission, Air-Sea Rescue Group headquarters directs the deployment of rescue units to cover the particular strike which has been decided upon. Normally, rescue aircraft crews are briefed for the mission by flight operations officers. Rescue planes, because of their slower speed and long range, depart for the target sometime in advance of the bombers' departure. Certain rescue craft proceed to predetermined points for rendezvous with fighter cover; from there to the target, arriving at the target area 10 to 15 minutes in advance of the bombers.

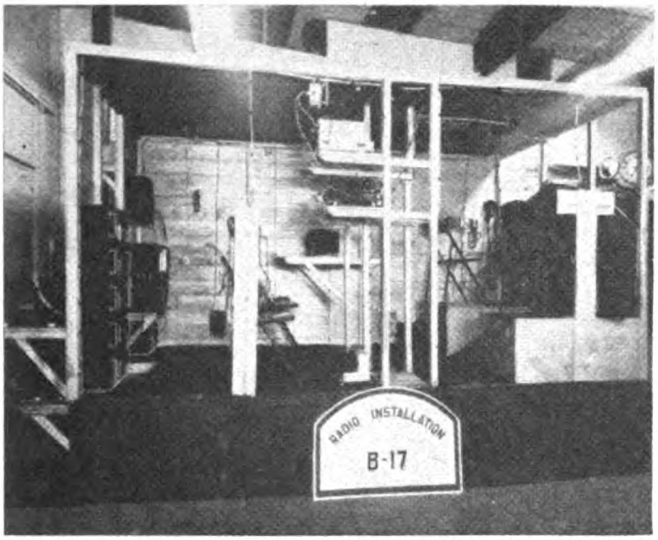
Each aircraft at the target area is assigned a sector for patrol and stands by for further orders by radio. Other

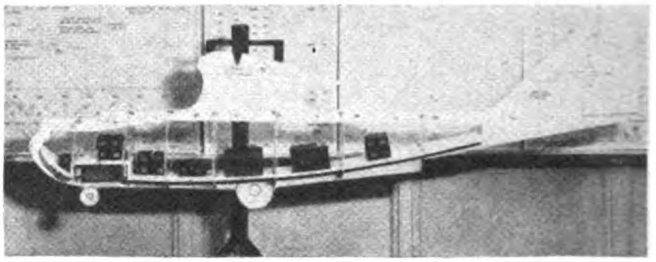




Survival exhibits include this demonstration (left) of campsite realistically and practically constructed. Droppable equipment is demonstrated by actual rafts in a setting simulating water conditions. The mural depicts a dropping action taking place.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN







(Above) Mock-up of B–17 radio installation shows men what to expect by way nf equipment. (Right, above) Cutaway 0A–10A with movable weights shows distribution of weights and balance. (Right, below) Familiarization with equipment is accomplished through exhibits.

rescue aircraft are dispersed along the bomber lanes and also stand by for further radio instruction. Rescue craft usually remain in their assigned area until the strike has been completed and tactical aircraft are enroute to base.

Rescue craft monitor all radio frequencies as directed, and those monitored generally include international distress, VHF (fighter and bomber frequency) station frequency, and command frequency (bomber command or air-sea rescue group from which orders are received).

When a ditching, bail-out, or crash landing occurs, rescue craft nearest the scene are dispatched to pick up survivors. If sea conditions permit the landing and take-off of amphibian airplanes, and the scene of the rescue operation in regard to enemy action is favorable, 0A–10A planes usually are employed. If, however, sea and weather conditions are unfavorable, surface craft or lifeboat-carrying B–17s are utilized.

For example, if a bomber were forced to ditch close to an enemy held shore or in narrow, confined, treacherous, shoal- or reef-abounding waters, the airborne lifeboat may be employed for rescue. Survivors boarding the lifeboat would be given a course to steer which would permit them to proceed from the scene of the ditching to an area more favorable to interception and pick-up by 0A–10A aircraft or rescue boats. Under certain conditions survivors may even return to their home base under their own power aboard the airborne lifeboat.

Procedures followed by air-sea rescue units are governed entirely by the tactical situation as it develops in any particular operation, subject to direction from air force, group and squadron headquarters. Prior to the accomplishment of the rescue mission, every predictable eventuality is anticipated and sufficient flexibility of operations allowed to provide the safest, surest, and most expeditious rescue service possible.

Stand-by Alert.—At all bases where rescue craft are stationed a condition of alert of one or more rescue units customarily is in effect. Units normally are dispatched by the flight operations officer upon receipt of information indicating the need for rescue craft for a search and rescue mission within a designated local area. The immediate local situation and mission involved governs the selection and utilization of rescue craft.

Land Search, Reconnaissance and Rescue.—OA–10A aircraft are frequently and successfully employed for land search in low country to spot survivors of crash landings; drop food, medical and other supplies; perform courier service in establishing communication between stranded air crews and bases of operation; reconnoiter such areas to provide necessary intelligence information for inaugurating rescue operations; transport and land shore parties in vicinities most favorable for rescue purposes, and return to friendly bases such shore parties and survivors.

Evacuation.—Rescue craft are used often in the evacuation of wounded personnel and prisoners of war when other methods of evacuation are neither practical nor possible.

Guerrilla Supply.—Rescue craft, air and marine, also have been employed successfully in supplying and maintaining liaison with friendly guerrilla organizations in isolated sectors.

(EDITOR'S NOTE.—Facts and methods of operation connected with this activity come within higher classification than the BULLETIN.)

Routine Patrol.—Air-sea rescue units conduct routine sector patrol of Troup Carrier, ATC, supply and ferry command air lanes.

Miscellaneous.—In addition to the above, these units may be required to perform observation duties on D-Days,

(Next page)

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Publications Catalogued

Air Sea Rescue Agency Library

30 May–30 June 1945

REFERENCE

Arctic, Desert and Tropic Information Center.
Survival; a Selected Bibliography . .. 1 January 1945. Orlando, Fla., Army Air Forces, Arctic, Desert and Tropic Branch, 1945. (Restricted.)

The Aviation Annual of 1945, Edited by Reginald M. Cleveland and Frederick P. Graham. Garden City, N. Y., Doubleday, Doran & Co., 1944.

U. S. Navy Dept. Bureau of Ships.
Bureau of Ships Manual. (Washington, D. C., U. S. Govt. Print. Off., 1943–45.)

DITCHING

U. S. Air Transport Command, Caribbean Wing.
Ditching Briefing for Passengers. West Palm Beach, Fla., 1944. (Mimeographed.)

EMERGENCY EQUIPMENT

Naval Medical Research Institute.
Tests on Plastic Litter Developed by Special Devices Division, Bureau of Aeronautics. Bethesda, Md., 1945. *Its* Research Project X–109c. (Mimeographed.)

U. S. Army Air Forces Board.
Anchor, Sea, Hemispherical, for Types E–2, A–3, and C–2 Life Rafts. Project No. 4407C542.16, 21 May 1945. Orlando, Fla., 1945. (Restricted.)

U. S. Navy Dept. Aviation Training Division.
Manual for Aviation Equipment and Survival Officers . . . (Washington, D. C.) 1945. NAVAER 00–80V–36, OPNAV 33–NY–34. (Restricted.)

HEALTH AND MEDICAL INFORMATION

Naval Medical Research Institute.
Reactions to Neostigmine and Apomorphine as Indication of Susceptibility to Seasickness. Bethesda, Md., 1945. *Its* Research Project X–278, Report No 4.
Chemical Studies on the Possible Toxicity of the Permutit "BaH" Desalting Briquet. Bethesda, Md., 1945. *Its* Research Project X–127, Report No. 9. (Restricted.)

Nolan, Roger A.
Debarkation of Litter Patients. San Diego, Calif., Headquarters Eleventh Naval District, District Medical Office, 1944. (Typewritten.)

U. S. Coast Guard Air Station.
First Aid and General Instructions Guide for 11th ND, USCG, AVR Pharmacist's Mates. San Diego, Calif. (1945). (Mimeographed.)

HELICOPTERS

Civilian Aspects of the Helicopter . . . *From:* Aero Digest, May 1, 1945, p. 81.

Coast Guard 'Copter Rescue Technique . . . *From:* Aero Digest, May 1, 1945, p. 83.

Erickson, Frank A.
A New Approach to the Problems of Rescuing Personnel at Sea . . . prepared for publication in the United States Naval Institute Proceedings. 1945. (Mimeographed.)
The Role of the Helicopters in the Saving of Life and Property . . . A talk given before the American Helicopter Society, 2 December 1944. (Mimeographed.)

Helicopter Rescue in a Snowstorm . . . *From:* Aero Digest, May 1, 1945, p. 82.

Helicopters . . . *From:* Life Magazine, Feb. 26, 1945, p. 91–92.

U. S. Coast Guard. (1st N. D.)
First Arctic Rescue by Helicopter (by) U. S. Coast Guard, Public Relations Office. Boston, Mass., 1945. (Mimeographed.)

LOCALE INFORMATION

Emory, Kenneth P.
South Sea Lore . . . Honolulu, Hawaii, Bernice P. Bishop Museum, 1944. (Rev. ed., September 1944.)

Porsild, A. E.
Emergency Food in Arctic Canada. Ottawa, Canada, Dept. of Mines and Resources, Mines and Geology, National Museum of Canada, 1945.

NAVIGATION (AERONAUTICS)

U. S. Naval Observatory.
The American Air Almanac, May–August 1945. Washington, D. C., 1945.

(Next page)

AAF Rescue School (cont'd)

escort duty for V. I. P., photo reconnaissance, ferry supplies and personnel, and many other nonrelated activities.

Training

The function of the Emergency Rescue School is to train air and marine rescue crews and units to the end that they may perform efficiently the air-sea rescue missions as detailed above. Since commitments for marine crews have been fulfilled, those at present attached to the school are used to assist the air section in the completion of its training.

Both 0A–10A and B–17 (lifeboat carrying) crews receive 8 weeks of operational training at Keesler Field. Training at the Emergency Rescue School simulates conditions in the combat zones as closely as possible. All missions are designed to acquaint crews with techniques and methods of operations used in the theaters of operation. One type of training mission which may be employed:

1. B–17, 0A–10A, and marine crews are briefed separately for rescue patrols to cover a simulated bomber strike on an island located somewhere in the Gulf of Mexico.

2. After briefing, crews proceed to predetermined patrol areas in the target area and stand by for radio reports of simulated ditchings or bail-outs.

3. Surface craft place life rafts containing personnel to simulate surviving crews of ditched aircraft.

4. Individual rescue crews proceed to ditching coordinates received by radio and conduct sea search until survivors are located. Rescues are effected by the most expeditious methods possible (i. e., marine craft, 0A–10A aircraft or airborne lifeboat).

5. Upon completion of the mission, all rescue craft return to the base.

These steps cover a very rough description of a training mission and are meant to serve only as an example. It is possible to simulate practically any type of air-sea rescue mission, and in training it is necessary to set up and perform at least one each of the types which probably will be encountered in combat.

(Next page)

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Publications Catalogued (cont'd)

U. S. Navy Dept. Aviation Training Division.
. . . *Nautical Astronomy and Celestial Navigation.* New York, McGraw-Hill Book Co., Inc., 1944. Flight Preparation Training Series.

OFFSHORE LANDINGS

Pilot Report(s) of Offshore Landing:
Biloxi Air Station, Biloxi, Miss.
Brunswick Air Station, Brunswick, Maine.
Elizabeth City Air Station, Elizabeth City, N. C.
Norfolk Air Station, Norfolk, Va.
Air Sea Rescue Task Unit, Port Angeles, Wash.
Air Sea Rescue Task Unit, Quonset Point, R. I.
Air Sea Rescue Task Unit, St. Petersburg, Fla.
San Diego Air Station, San Diego, Calif.

PARACHUTES

Mink, O. J.
Meet the Parachute . . . Chicago, Ill., Reliance Manufacturing Co., Parachute Division, 1944.

U. S. Army Air Forces, Proving Ground Command.
Final Report on Test of Parachutes, One Man Life Raft Packs, and Emergency Kits, Serial No.: 7–44–17 . . . 2 May 1945. AAF Board Project No. J3704. Orlando, Fla., Eglin Field, 1945.

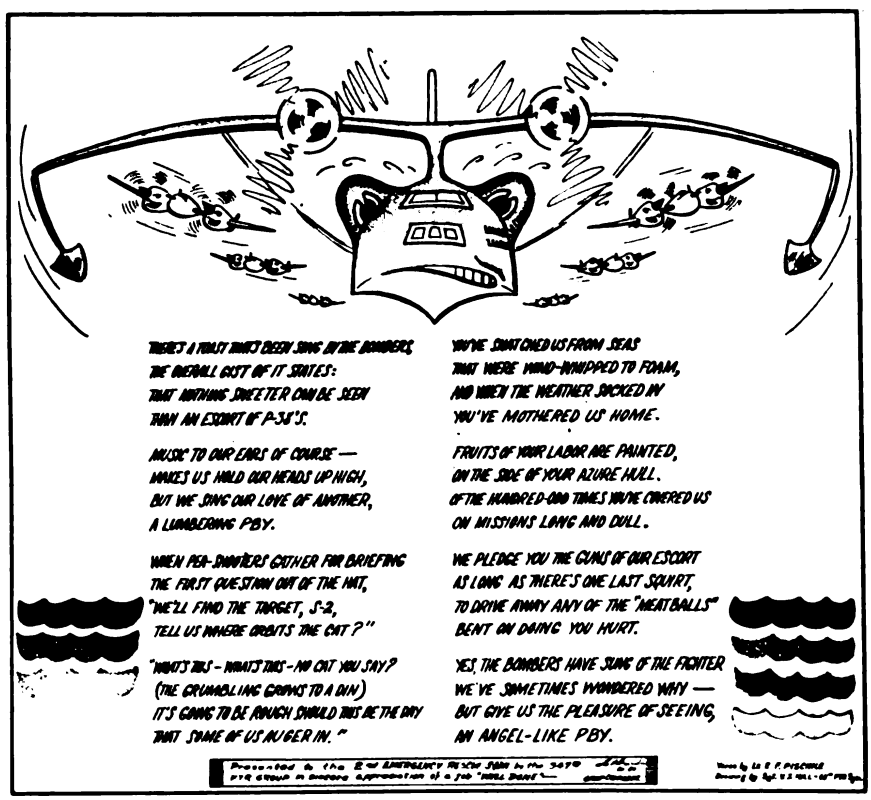
U. S. Navy Dept. Bureau of Naval Personnel. Training Division.
Parachutes . . . Washington, D. C., U. S. Govt. Print. Off., 1944. (Restricted.)

RESCUE CRAFT

Hickman Sea Sled Company.
Memorandum on Development 78-Foot Sea Sled, Three Motor Type . . . Boston, Mass., 1944. (Processed.)
Sea Sled Performance Claims. Boston, Mass., 1945. (Processed.)

SIGNALS AND SIGNALING

U. S. Navy Dept. Aviation Training Division.
Radio Discipline Sense. (Washington, D. C., U. S. Govt. Print. Off.) 1945. NAVAER 00-80Q-24.



Echoing the sentiments of many a fighter pilot, this poetic and artistic tribute was composed for an air-sea rescue unit. The legend at the bottom reads, "Presented to the 2nd Emergency Rescue Squadron by the 347th Fighter Group in sincere appreciation of a job '*Well Done*'."

AAF Rescue School (cont'd)

Suggestions and ideas gleaned from letters received from former students of the school now in combat theaters, as well as the personal reports of returnees who have had actual combat experience in air-sea rescue, have been of inestimable value to the Emergency Rescue School in forming its curriculum. Crews trained in the school have made a lasting contribution to the war effort by having *performed more than 1,200 rescues.* As new rescue units arrive in the theaters of operation, this figure will be multiplied. With the expansion of the air-sea rescue training program, the trickle of rescue units is becoming a steady stream, and the tangible benefits of the entire program will become increasingly apparent in the months to come.

The pilot of the doomed B–24 stated that his ship was struck by anti-aircraft fire after he had released his bombs on the objective. All of his radio equipment and two engines were put out of commission. He fell behind the formation, was not seen by the other crews and was forced to land in the open sea. The plane submerged 10 minutes later. Six members of the crew, apparently killed in the crash, went down with the ship. The survivors were under full sail for Biak Island, 300 miles away, when sighted.

3. In September the pilot of the rescue plane Daylight 11, departed from Middleburg Island to cover a B–24 strike on Balikpapan, Borneo. He reached his orbit point in the Gulf of Toronalo and, circling for 3 hours, sighted a B–24 coming away from the target with one engine afire. The B–24 crew parachuted into the sea. The rescue plane landed and taxied 2 miles down the line of survivors until the entire crew of 10 was taken aboard. The ship was unable to rise from the sea. All guns, ammunition, and 150 gallons of fuel were jettisoned, and after four more attempts the plane rose, bounced from swell to swell and took to the air. When the rescue plane approached its base, an air raid was in progress and it was forced to circle until allowed to land. The time of the mission was 17 hours and 25 minutes, the longest mission up to this date.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

MARINE AVIATION

Survival Training

Third Marine Aircraft Wing Develops Intensified Course in Hawaiian Islands

Designed to augment training which personnel have had elsewhere, the Third Marine Aircraft Wing, Fleet Marine Force, has developed a survival training course in the Hawaiian Islands which focuses special attention on comments and recommendations of fliers who have experienced the hazards of being forced down at sea or in the jungle. The program started and developed under the command of Brig. Gen. Walter G. Farrell, USMC, well known for his interest in survival and air-sea rescue techniques.

The course is divided into 12 sections, with a final test (1) to ascertain the effectiveness of the course, and (2) as a guide for schedule and class changes. In addition, there is a special short course for lifeguard instructors on fishing from outrigger canoes. Sections of the condensed course include: Geography of the Pacific; Emergency Flotation Equipment and Parachute Landing Techniques; Oxygen and Oxygen Equipment; Raft Navigation; Fish and Fish Poisoning, Birds and Plants; Survival on Land and Sea; Care of the Body Aboard a Life Raft and First Aid Rough Water Swimming and Swimming Instruction; Emergency Distress Signaling Devices; Jungle Living and Dealing With Natives; Practical Jungle Survival Work, and Care and Use of Weapons.

By the middle of January, 1945, graduates of the course totalled 1,144, eighty-three of whom were enrolled on the request of a Navy air group.

Geography of the Pacific

Location and distances between important island groups are discussed, with emphasis on the far Western Pacific. There is a brief review of the history of important islands, as well as the history and location of various native groups. Native characteristics are scrutinized for the close attention of trainees. Also embraced in this section of the course are weather in the Western Pacific, terrain features, and characteristics of atolls and volcanic islands.



Demonstrating smoke grenade; practicing with signal mirrors.

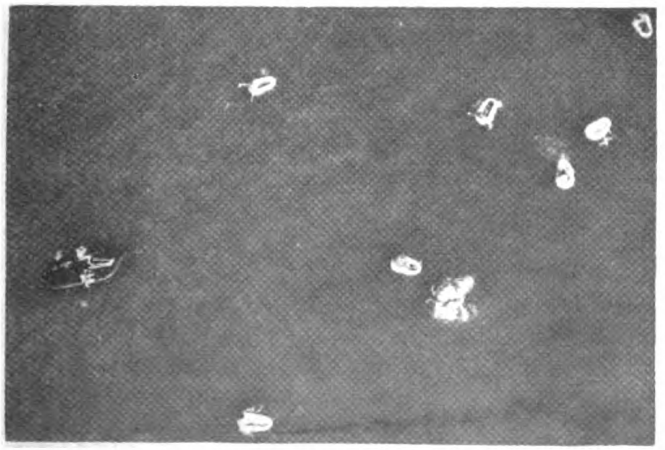
Emergency Flotation Equipment and Parachute Landing Technique

The following equipment is demonstrated with instruction covering its use: the Mae West life jacket, pararaft and larger types of pneumatic rafts.

In a controlled situation (swimming pool), instruction includes inflation of Mae West jackets and pararafts, and in leaving the parachute harness; demonstration of a simulated water landing, and practice of simulated water landing according to this sequence:

1. Student raised to height of 25 feet in parachute harness attached to pulley.
2. Student lowered at speed of parachute descent.
3. Student releases himself from harness, inflates Mae West, then pararaft; paddles to far end of pool, where he familiarizes himself with raft and methods of handling.

Students practice in the use of equipment in surf (beach area), learning how to launch a raft through the surf and how to inflate life jackets under adverse conditions. Practice on the beach comes next; then practice beyond the breaker line. Here the airman jumps overboard, inflates his Mae West (half orally and half mechanically), inflates pararaft, and uses signaling mirror to flash to lifesaving tower when ready to come through the surf.



Inflating and boarding one-man rafts. Note black lifeguard. Raft on the left.



"Getting the word" at beginning of training.

655866—45——3

Digitized by Google

Original from UNIVERSITY OF MICHIGAN



PBJ crew leaving crash boat with raft.



PBJ crew boarding inflated raft.



Using mirror and preparing fish spear in raft.

Night use of survival gear in a controlled situation (swimming pool) is designed to give students experience of operating equipment in total darkness and entirely by sense of touch. Each man jumps into the water, inflates his Mae West (half orally and half mechanically), inflates the pararaft and paddles about in darkness.

Elements of parachute landing techniques cover individual instruction in donning, unhooking and sliding out of the particular type of parachute harness with which each student is equipped. There is additional instruction on landings in high winds, in trees and on hard surfaces.

In a simulated castaway expedition, the class is taken 15 miles out to sea in a 63-foot AVR crash boat. Each man is dropped from a 10-foot height in a parachute harness, rigged at the stern of the AVR, and inflates his flotation gear. Groups of four or five men lash their rafts together and drift 5 hours at sea. The "castaways" use emergency signal devices: smoke bombs or grenades, sea marker, signaling mirror, Very pistol, whistle and signal panels.

While students are in the water, their organizations keep search planes overhead, which gives pilots practice in locating rafts at sea. After tossing adrift for 4 or 5 hours, the class is picked up by the AVR and taken about 600 yards off the beach area; from there a simulated beach landing is practiced.

Safety precautions are observed while the trainees are bobbing merrily away in their rafts. The AVR stands by, maintaining radio watch and a lookout, who is armed with a .30 cal. rifle. Lifeguards are aboard the AVR when students are dropped in the water. A 10-man black invasion raft, equipped with an outboard motor and manned by expert lifeguards who are armed with .45 caliber pistols in case of sharks, patrols constantly in and out of pararaft groups. The invasion raft has smoke signals to be used in an actual emergency.

Oxygen and Oxygen Equipment

The use and effects of oxygen are reviewed for pilots and aircrewmen, including types of oxygen equipment and location in different types of planes. Proper care of equipment is stressed, along with preflight checks.

Raft Navigation

Primitive methods of navigation, with a rudimentary knowledge of birds, stars,

Digitized by Google

Original from
UNIVERSITY OF MICHIGAN

currents, winds and swells, introduce this topic to students. Instructions on the life raft drogue (when and how long used) are included. *It is strongly recommended that airmen have a whistle, compass and mirror with them on all flights.*

Procedure to be taken before ditching covers these points: estimate ditching position, estimate wind direction and force at sea surface, decide whether or not to use drogue (if not decided before flight), see that each crew member who has a handkerchief chart receives the estimated ditching position, and try to retain parachute to use as a sail or to catch water.

After boarding the raft, airmen learn how to locate their position either with a compass or without one, using a watch. Further instruction includes: finding direction by stars, plotting a course by use of NACI-HO cloth survival charts, calculating distance at sea from visibility of objects, measuring angles without instruments, and the work of air-sea rescue units.

It is pointed out that men in a life raft should be vigilant in seeking indicators of land, among which are seaweed, scent and sounds of land, roar of heavy surf, ship whistles and bells, cloud formations over land and the flight of certain birds.

Fish and Fish Poisoning, Birds and Plants

Students are cautioned that poisonous plants have distinguishing characteristics, such as milky sap and a sheath inclosing new leaf buds. Examples of typical poisonous plants are presented. Discussion moves next to poisonous fish and those which are poisonous at all seasons, contrasted with those that are harmful only during definite periods of the year. Birds, as a source of oil for care of skin or weapons, and as indicators of direction and distance of land, are treated more thoroughly in this unit of instruction.

Concluding the section, there are 100 hand-colored photographs of birds, plants and fishes shown which will aid trainees to remember the various species.

Survival at Sea and on Land

Familiarity with life raft articles and gear is essential; therefore, knowing all articles and the use of each, in addition to checking for completeness and usability, is discussed thoroughly.

Since the water supply is always of



Skinning a mongoose for chow.



Building traps and snares.



Inspecting taro, a jungle survival food.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

prime consideration, there is detailed instruction on ways of catching rain water, blood content of birds as a source of moisture, the small amount of moisture obtainable from chewing fish, liquid from floating coconuts and the proportion of mixture in diluting fresh water with sea water (although this method is not recommended).

The flesh of fish and birds, and meat from floating coconuts are outlined as food sources. Canned rations, instructors teach, are to be used only as a last resort. Food and water supply on land are covered in detail. This includes: methods of catching sea foods, birds and their eggs, construction of surface wells and ways to purify water.

On vegetated islands, coconuts often are the main survival plant. Airmen learn in minute detail the three stages of coconut growth and the quality of the meat and liquid at each stage. Other uses taught for this versatile plant are oil for fuel, lubricant for weapons and sunburn lotion; improvised equipment from shells and husks.

Poisoning fish with barringtonia, a large tree which has fleshy, one-seeded fruits, is explained. The crushed seeds are mixed with bait or can be thrown into a tidewater pool or water hole in coral, stunning fish and making them easier to catch.

The technique of thatching with fronds is demonstrated, as well as weaving useful articles from leaf material. Methods of obtaining the durable hau bark, and its uses as twisted line and braided rope are discussed. Every person who is a potential land survivor should know numerous string-fashioning techniques and from what plants they are derived.

Care of the Body Aboard Life Raft and First Aid

Care of the body aboard a life raft is important, obviously, for survival. This section is introduced with a demonstration of the Navy drinking water (desalination) kit, and each member of the class samples the product so that he will know what to expect if it is ever necessary to use the kit. Next comes a discussion of water rationing: how to ration yourself, how to utilize the ration decided upon to the best advantage, when to drink and when not to drink, utilization of rain water, elementary discussion of kidney efficiency and what affects it, and case histories of castaways who have survived beyond reasonable expectation with an extremely limited water ration.

Food aboard a raft is treated in a similar manner: types of food rations available, different effects of various types of rations, when to eat and when not to eat, relative importance of food and water, and what to expect in the way of bowel movements.

Protection against the elements is emphasized. Following this is a brief discussion on the importance of keeping the raft as dry as possible and relieving pressure on buttocks, legs, arms, etc.

First-aid training consists of reviewing first-aid treatment with emphasis on a few simple, easily administered procedures, using available materials. Description and prevention of shock, treatment of fresh water obtained ashore, use of atabrine, and danger of food from native gardens are also covered in this unit of instruction. A conducted tour through field sanitation exhibits demonstrating the proper procedure to use in the field, with all aspects of sanitation explained, concludes the section.

Rough Water Swimming and Swimming Instruction

In the first period (swimming pool), students must swim 100 yards using no overhand or out-of-water strokes.



Establishing course during compass march

Weak swimmers and non-swimmers are segregated for further training. The instructor lectures on types of strokes best fitted for rough water swimming. Each man practices these strokes after demonstration: rough water breast stroke, side stroke, back float stroke and bobber stroke.

The second period, at the beach area, covers instruction on tides and currents, coral formations, how to approach unknown beaches, riding waves into shore, swimming through breakers and heavy seas, use of the "buddy" swimming system, lifesaving procedures for surf swimming, and dangers of seaweed and underwater growths. Students practice the various swimming techniques.

A qualification swim of 300 yards through the surf just past the breaker line and back into the beach is the goal for the third swimming period. There are supplementary periods for non-swimmers, weak swimmers and those who fail to qualify in the third period. Objective of swimming instruction: to enable each man to stay afloat without artificial aids for at least 5 minutes.

Emergency Distress Signaling Devices

Practical work in the use and visibility range of the signaling mirror, Very's pistol, smoke grenade and holder, sea lamps, sea marker, and signaling panel or sail is the objective of this section.

Jungle Living and Dealing With Natives

How to meet and treat natives and how to determine whether or not they are friendly is stressed, because an airman's return to safety is often dependent on relations he establishes with natives. Jungle living in specific geographical areas is also discussed. During a tactical walk through tropical gardens in Honolulu, the class sees edible and poisonous fruits and plants of the area. Study of edible and poisonous fish is made possible by a visit to an aquarium.

Practical Jungle Survival Work

The class embarks on a field trip by finding the bivouac area by compass. When this area is reached students construct shelters, collect edible fruits and vegetation available, construct snares and traps to catch animals, and finally cook the food they have procured.

Trainees are briefed on how to move

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

through jungle terrain. Following this is a night problem on moving through such terrain in enemy territory. One half of the class attempts to move through the other half, which is deployed as the enemy.

Care and Use of Weapons

Normal care of weapons—field stripping, handling, effects of firing, and cleaning—is discussed. Instruction on care of weapons in a raft includes the value of using waterproof containers when available. The lecturer describes the technique of breaking down a cartridge; emergency use of powder to signal, start fires or cook, and safety precautions to be observed in handling ammunition.

In a discourse on the ballistics of hand weapons, the class learns pointers on: bore diameter, weight of a ball, velocity, effective range and muzzle striking energy.

Range regulations, safety precautions and firing procedure are discussed. Included in range firing is information to perfect techniques of correct posture, sight alignment, firing positions and value of "group" firing.

Advanced Survival Training

All pilots and aircrewmen of the Third Marine Aircraft Wing, FMF, up to field rank must attend an advanced survival training course at some period after completion of the basic survival program, described above

Two classes of 20 students each, one class beginning on Monday and one on Wednesday of each week, begin the 7-day advanced training course, schedule of which is reprinted in the outline.

Schedule for Advanced Survival Training

FIRST DAY

Time	Subject	Activity
0730 to 0830	ORIENTATION	Purpose of course, issue and discussion of schedules, location of training areas. (*Survival Training Officer.*)
0830 to 1030	SURVIVAL TRAINING FILMS.	(a) SN 2006B (Coconut) (b) SN-2006C (Coconut) (c) SN-1538 (Survival in South Pacific) (d) (Castaway) MCAS. (*Synthetic Training Officer.*)
1030 to 1130	KITS AND EQUIPMENT	Demonstration and discussion of various kits and equipment issued aviators, including additional recommended items to be included if possible. (*Wing Parachute Officer.*)
1130 to 1300	CHOW	
1300 to 1700	RUBBER RAFT	Demonstration, familiarization and preliminary practice with rafts in pool. Practice swimming with flight gear on. (Special training for poor swimmers.) (*Wing Parachutes and Survival Officers.*)

SECOND DAY

0730 to 1130	WATER (FLUIDS FOOD)	How to obtain and use at sea. *Lecture.* How to obtain and use at sea. *Lecture and training films.*
	CARE OF BODY	Hints for survival aboard raft. (*Lecture, Wing Medical Department.*)
	RAFT NAVIGATION	Hints for daytime. (*Wing Intelligence Officer.*)
1130 to 1300	CHOW	
1300 to 1700	RAFT TECHNIQUE	Both smooth and rough water. Equipment: Full flight gear and rubber rafts. Use of fishing gear for last hour. (*Wing Parachute and Survival Training Officers.*)
1700 to 1930	CHOW	
1930 to 2200	RAFT TECHNIQUE	Night. Start in water with full flight gear. Set up rafts, get aboard, prepare for night, put out sea anchor, estimate latitude by stars, longitude by charts. (*Survival Training Officer and Wing Operations Officer.*)

THIRD DAY

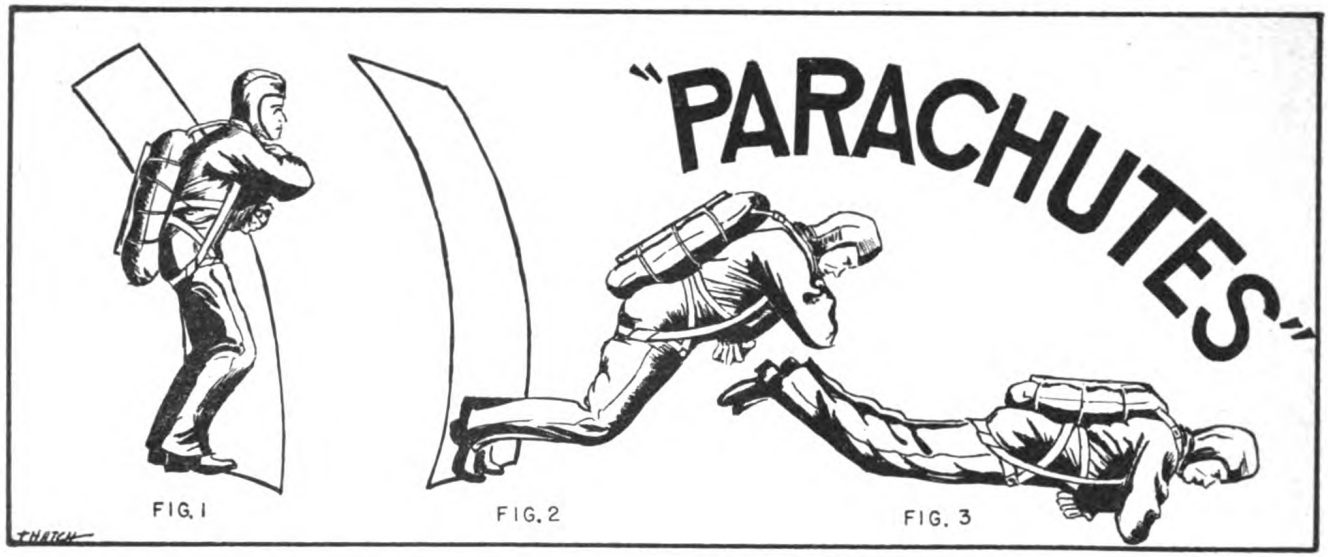
0730 to 1130	REVIEW OF U. S. ARMY JUNGLE LIVING COURSE	
	GEOGRAPHY OF ISLANDS	Lecture. (*Wing Intelligence Section.*)
	WATER	(1) Digging and preparation of surface wells. (2) Extracting water from fish. (3) Extracting water from plants and trees. (*Survival Training Officer.*)
	FOOD	Demonstration and review of all survival, foods (pigweed, pandanus, coconut, ferns, etc.). (MCAS *Horticulturist.*)
1130 to 1300	CHOW	
1300 to 1700	SURVIVAL FOODS FROM THE SEA.	Practice work. (a) Fishing with hook and lure, goggles, traps, and nets. (b) Shellfish, near shore. (c) Poisons (discussion of Barringtonia, derris, etc.)
1700 to 1900	CHOW	
1900 to 2200	FIRST AID, SANITATION, CARE OF BODY.	Splints, pressure points, use of first aid packet, moving of injured men (if necessary), malaria, enteric diseases, treatment, and purification of water, etc. (*Wing Medical Department.*)

FOURTH DAY

0730 to 1200	TRIP	Through Bishop Museum, Honolulu, T. H. (Talk: *Dr. Emory.*)
1200 to 1300	CHOW	

(*continued on page 35*)

Digitized by Google
Original from UNIVERSITY OF MICHIGAN



Parachutes, a 202-page publication of the Naval Air Technical Training Command and the Training Division of Naval Personnel, is one of a series of books designed to give parachute riggers the background information necessary to perform their aviation duties. A knowledge of parachutes and other lifesaving equipment, such as life jackets and life rafts, is of primary importance to these men in their job of equipment upkeep and maintenance. More important, such knowledge may mean life or death to Navy airmen.

The book starts out with a discussion of the parachute's importance and explains the forces which act upon it when a jumper hits the silk. The ensuing chapters, profusely illustrated, picture design and construction of parachutes, types of chutes, loft set up, inspection, repair and parachute packing. There is additional information on drop-testing and jumping procedures. The concluding chapters include sections on cargo chutes, life rafts and life jackets.

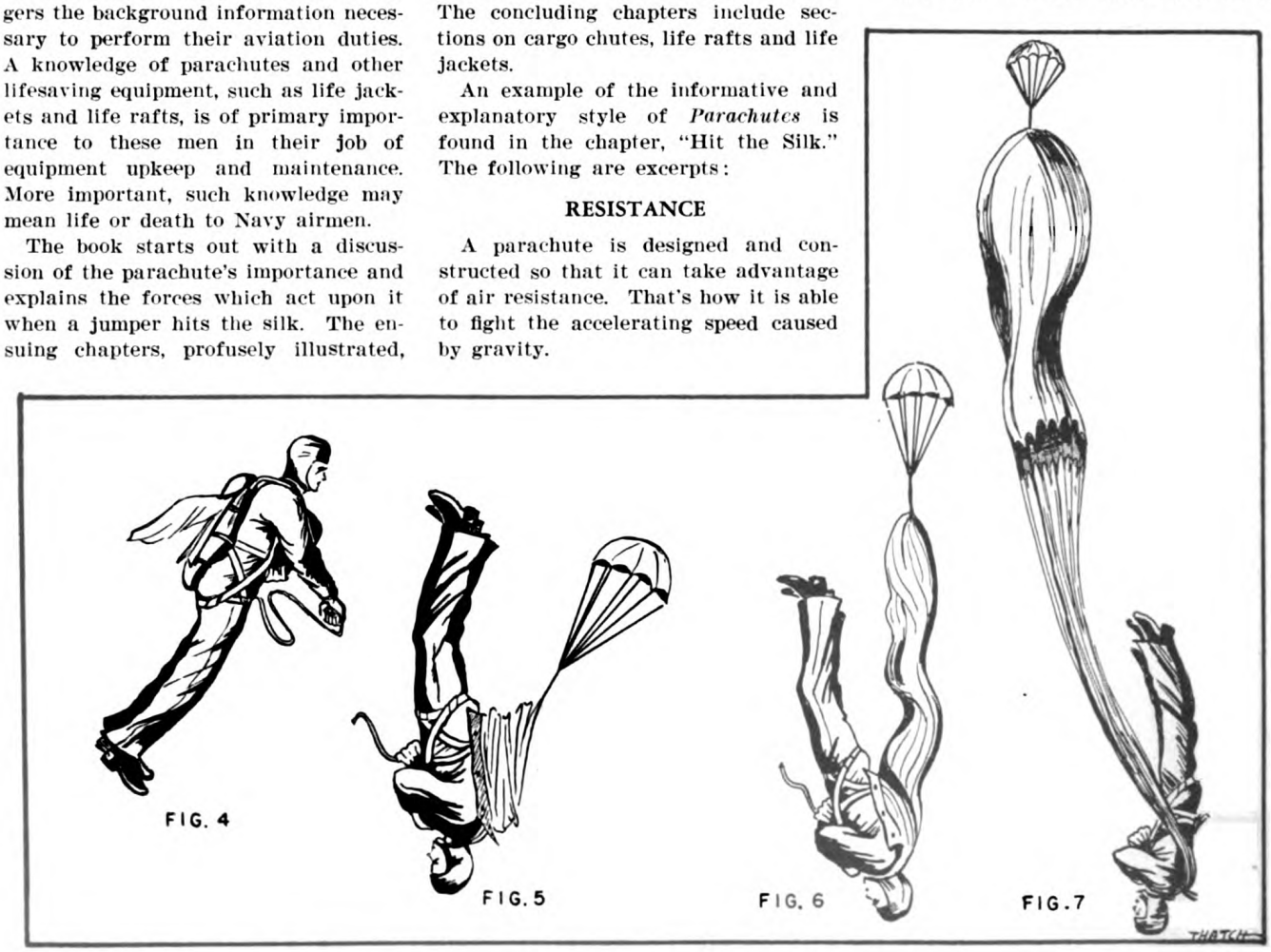
An example of the informative and explanatory style of *Parachutes* is found in the chapter, "Hit the Silk." The following are excerpts:

RESISTANCE

A parachute is designed and constructed so that it can take advantage of air resistance. That's how it is able to fight the accelerating speed caused by gravity.

The faster an object moves through air, the greater the resistance it has to meet. Resistance slows down the speed of the moving body.

The man who fell 32,000 feet in a



Digitized by Google
Original from UNIVERSITY OF MICHIGAN

little more than 44 seconds met no resistance because he was falling in a vacuum; there was no air.

Now let the same man fall through air. During the first second he falls about 16 feet; during the second, about 48 feet. As he falls faster, resistance really begins to take effect. By the time he has fallen for about 12 seconds, he has reached a velocity of 175 feet per second (120 miles per hour). No matter how much farther he falls, he won't fall any faster. This is because the air that piles up in front of him as he falls resists his body surface with a force equal to the tendency of gravity to pull him faster. In other words, the acceleration has stopped and he falls at a constant velocity. This constant or maximum speed is called "terminal velocity."

The task of the parachute is to lower a man at a safe terminal velocity. The chute can do this because it can present a large "body surface"—450 square feet of it.

ACTION SHOT

The parachutist is ready to jump. As he leans forward, knees bent (fig. 1) he pushes himself as though he were springing into a dive (fig. 2). As the jumper leaves the plane, he is almost in a prone position (fig. 3). As he starts to fall, notice what happens. The heavy part of his body pulls him head first (fig. 4). You know that air is resisting his body surface as it falls. He has not yet had time to reach the terminal velocity, but he pulls the rip cord to open the chute. Meanwhile (fig. 5), he continues downward, head first. You can see that a small chute—the pilot chute—is pulling the parachute from the pack on the jumper's back. Almost upside down (fig. 6), the jumper still continues downward.

The chute is about to take over. Notice that it is completely free of its pack (fig. 7). The jumper appears to be starting the second half of a somersault. The chute has not yet presented its maximum body surface (fig. 8). But watch carefully. As soon as air fills the inverted cup, it resists the parachute. At this moment, the chute has suddenly presented its maximum surface (fig. 9). The opening time—from the instant the rip cord is pulled until the parachute is fully opened—averages less than 2 seconds. The moment of strain is shared by the jumper. Notice that the jumper takes the shock in a sitting position. That way he can take the shock load on the heaviest part of his body. But the shock is brief and he is soon lowered at a safe rate of descent. Note that the pilot chute has disappeared. The air immediately below the pilot chute is cut off by the main canopy. With no air to resist the pilot chute, it quickly collapses.

By adjusting his position in the harness (fig. 10), the jumper can enjoy his ride down. As he gets ready to land (fig. 11), knees bent, good grasp on the life webs, he is still aware of the fact that his chute may encounter resistance even on land if it is not collapsed immediately.

That's how a parachute brings 'em back alive.

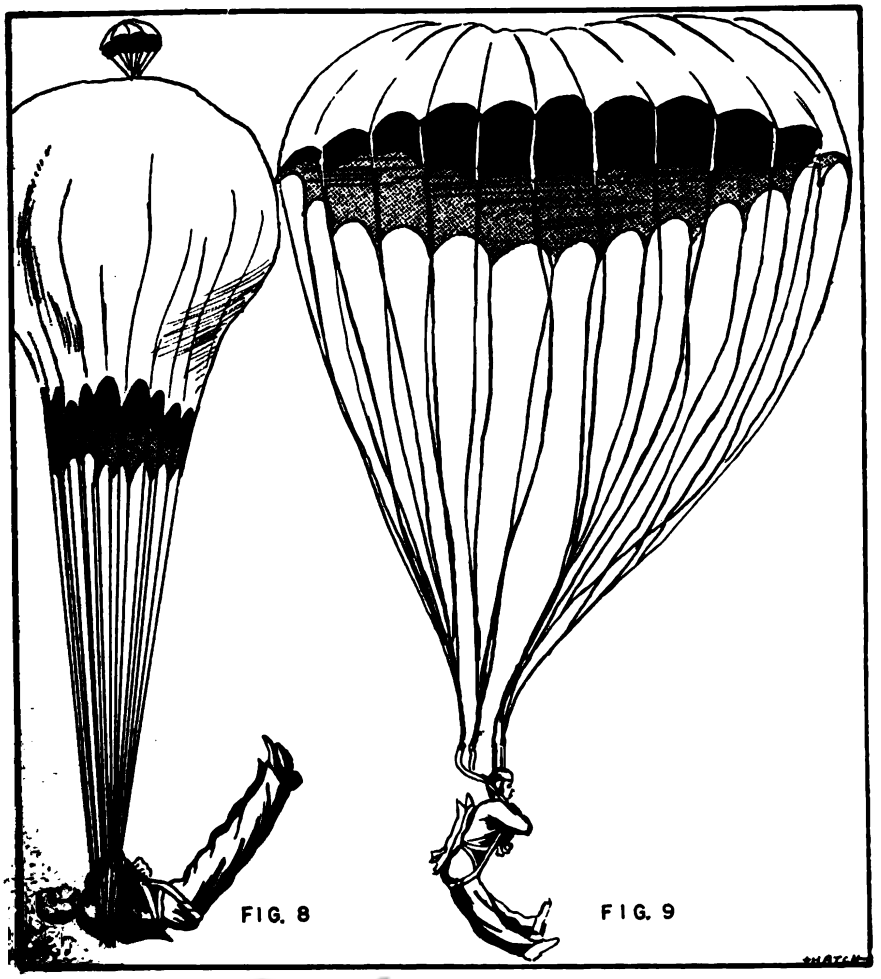


FIG. 8 FIG. 9

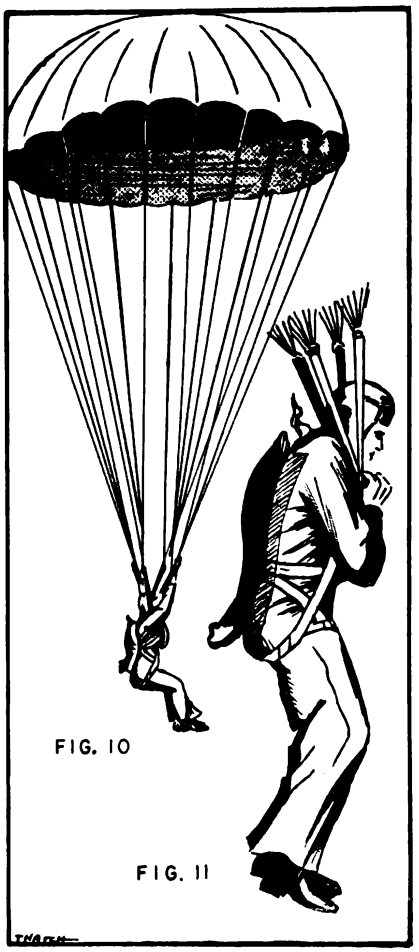


FIG. 10

FIG. 11

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

"Survival—A Selected Bibliography"

Compiled by Arctic, Desert, Tropic Branch, AAF

This is the concluding installment in a series of three, reprinting the survival bibliography compiled by the Arctic, Desert and Tropic Branch; Headquarters, AAF Tactical Center, Orlando, Fla. The bibliography is divided into these headings:

A. General
B. Arctic
C. Tropic or Jungle
D. Desert
E. Ocean
F. Air-Sea Rescue

Section A was printed in the No. 11 issue of the AIR SEA RESCUE BULLETIN. Sections B. and C. appeared in issue No. 12. The three final sections are listed below.

Since the first two sections of the *Survival Bibliography* were published, several changes in designations have been made, according to Headquarters, AAF Center, Orlando:

1. All references to "AFTAC" should read "AAF Center, Orlando, Fla."
2. All references to "AAFSAT" should read "AAF School, AFCTR, Orlando, Fla."
3. The "ADTIC" is more correctly referred to as the "ADT Branch, AAF Center, Orlando, Fla."
4. The *Personal Equipment Officer's Manual*, 1944, 293 pp., Office of Flying Safety, was never actually published by that agency. It was rescinded following publication of the manual released by the Aero Medical Section, AAF School (then AAFSAT). (Editor's Note: This title appeared in AIR SEA RESCUE BULLETIN No. 11.)
5. The *Personal Equipment Officer's Manual*, 1944, AAFSAT, is to be republished under the title, *Reference Manual for Personal Equipment Officers* as an official Air Forces manual. This is scheduled to be available late in the summer through the Air Technical Service Command.

The changes noted above have been effected in this section of the bibliography.

Title, author, date, number pages, format	Issuing and distributing agency	Content
D. Desert		
THE DESERT—GENERAL CONDITIONS, ADTIC—Nine School Lectures—D-1 1943. Second revision 1944. 20 pp. Mimeo. 8 x 10½. Unclassified.	*Obtainable from:* ADT Branch, AAF Center, Orlando, Fla.	Instructors' manual for orientation. Climate, natives, care of personnel.
THE DESERT—SURVIVAL, ADTIC—Nine School Lectures D-III. 1943. Second revision 1944. 12 pp. Mimeo. 8 x 10½. Unclassified.	*Obtainable from:* ADT Branch, AAF Center, Orlando, Fla.	Instructors' manual. Preflight precautions, signaling, water, shelter, travel, health rules.
EMERGENCY LIVING IN THE DESERT, ADTIC Bulletin 1, 1944 (20 July). First issued Mar. 1943 under title of "Forced Landings and Desert Survival". 20 pp. 22 illus. 7¼ x 9½. Unclassified.	*Obtainable from:* ADT AAF Center, Orlando, Fla.	Principles of survival in desert, and directions for rationing of water, kinds of food, shelter, etc.
CARE OF PERSONNEL IN THE DESERT ADTIC Bulletin 7. 1943. Revised, 25 Jan. 1944. 15 pp. 26 illus. 7¼ x 9½. Unclassified.	*Obtainable from:* ADT Branch, AAF Center, Orlando, Fla.	Maintenance of health in the desert; protection against disease, advice on clothing, food, water.
SURVIVAL IN THE DESERT 1943 (Mar.) 40 pp. Mimeo. Restricted.	Published by Airlines War Training Institute, 1740 G St. NW., Washington, D. C. (Superseded by Item A-1.)	Items of kit, water, food, care of health.

FLIGHT SURGEON'S NOTES ON PACIFIC RESCUES

"Notes from a Flight Surgeon," printed in the May, 1945, *Bulletin of the U. S. Army Medical Department*, describes the set-up of emergency rescue squadrons in the Pacific. The article concludes with a summarization of three typical rescue missions by Maj. Donald D. Corlett, a flight surgeon with one of the squadrons.

Emergency rescue squadrons operate in the far Pacific areas to rescue air crews forced to abandon their planes during combat missions and to assist in evacuating sick and wounded from remote battle areas. The crew compartment of the rescue plane is equipped with four bunks for litter patients, and in another compartment, in emergencies, an additional two to four litter patients can be carried. The unit equipment which was too heavy was disassembled and medical supplies were packed in smaller and lighter containers.

The flight surgeon or surgical technician supervises the transfer of survivors to the rescue plane, after they are located in the sea or in the jungle. Anyone who has manipulated a rubber life raft in a rough sea knows the difficulty of conveying survivors from off-shore to the plane. This is done by three men with a Stokes litter on which the patient lies crosswise on the gunwales in the center of the raft. One man on either end paddles, and the third keeps the survivor from being dumped into the sea. On reaching the plane, a line is passed from each end of the raft; then the crew members in the aft section lift the survivor aboard.

The following are excerpts from Major Corlett's report:

1. A message was received in July to proceed to Lake Rombebai, Dutch New Guinea, to evacuate wounded men from an outpost on the shore of the lake in enemy territory. The PBY proceeded to the area, circled the lake several times and located the men. They taxied within 100 yards of the shore, launched the life raft, and found 10 American and Australian soldiers, 7 of whom were wounded, and 1 wounded Jap prisoner. The 10 men, sleeping in hammocks, had been attacked by 50 Japs, who sneaked up on the guard. The men fought with

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Title, author, date, number pages, format	Issuing and distributing agency	Content
DESERT OPERATIONS F. M. 31-25 1942 (14 Mar.) 70 pp. 4¾ x 6¾. Unclassified.	Published by War Department, Superintendent of Documents, Government Printing Office, Washington, D. C. *Obtainable* through normal channels used in ordering War Dept. publications.	Tactics and procedure for ground forces, with instructions for care of health.
PREDICTION OF WATER REQUIREMENTS OF MEN IN THE DESERT. Interim Report No. 7 to CMR concerning water metabolism in desert troops. Contract OEM CMR 206. Adolph, E. F. and Brown, A. H. 1943 (25 May). Mimeo. Unclassified.	CMR National Research Council, 2101 Constitution Ave., Washington 25, D. C.	Scientific reports of interest chiefly to medical and personal equipment officers.
SURVIVAL TIME OF MEN WITHOUT WATER IN THE DESERT. Interim Report No. 8. Rochester Unit to CMR. Contract OEM CMR 206 Siple, P. A.; Heald, W. F.; Adolph, E. F. and Brown, A. H. 1943 (25 May) Mimeo. 8½ x 11. Unclassified.	CMR National Research Council, 2101 Constitution Ave., Washington 25, D. C.	Of interest to medical and personal equipment officers.
SAFETY EAST—CENTRAL-WESTERN CHINA. Gates, Cpl. Roy P, n. d. 7 pp. Illus. Mimeo. 8 x 10½. Unclassified.	Published, compiled and *obtainable from:* First Mapping Group, S-2 Section, Bolling Field, Washington, D. C.	Dealings with natives, food, bathing, pests. Plate shows poisonous snakes.
PILOTS' GUIDE. Sherman, Lt. Col. Dallas B., 1943 (Sept.) 95 pp. 10 illus. Mimeo. 8 x 10½. Unclassified.	Published by and *obtainable from:* AAF Air Transport Command, Central African Division, AAF Annex No. 1, Washington, D. C.	Sources of information, personal care, clothing, language and customs, survival, useful conversion tables.
E. Ocean RECIPE FOR SURVIVAL Chambliss, Lt. Commander Wm. C., U. S. Navy. 1943. 16 pp. 7 x 9¾. Unclassified.	Reprinted from U. S. Naval Institute Proceedings July 1943. Issued by Coordinator of Research and Development, U. S. Navy, *obtainable from:* Air Sea Rescue Agency, 1516-14th St. NW., Washington, D. C.	Brief description of how to abandon ship and use life rafts. Chiefly of Naval Interest.
HOW TO ABANDON SHIP Richards, Phil, and Banigan, John J. 1942 Revised Sept. 1943 second edition. 196 pp. Illus. $1. 4¼ x 7⅛ Unclassified.	Published by and *obtainable from:* Cornell Maritime Press, 241 W. 23d St., New York 11, N. Y.	Just what the title states with notes on life boat seamanship, first aid and navigation.
SAFETY FOR SEAMAN 1943. 107 pp. Illus. 4⅛ x 5¾. Unclassified.	Published by and *obtainable from:* Medical Division, War Shipping Administration and United Seamen's Service, Inc., 107 Washington St., New York 6, N. Y.	Instructions for abandoning ship, procedure in life boat, and first-aid for survivors.
FIRST-AID TREATMENT FOR SURVIVORS OF DISASTERS NAVMED 153 1943 (1 April). 17 pp. $0.05. 4¾ x 7⅛. Unclassified.	Published by Bureau of Medicine and Surgery, U. S. Navy, Washington, D. C. *Obtainable from:* War Department, Superintendent of Documents, Government Printing Office, Washington, D. C.	General first-aid with special attention to burns, immersion foot, cold, starvation, and thirst.
WARTIME SAFETY MEASURES FOR MERCHANT MARINE REGULATIONS AND RECOMMENDATIONS. 1943 (Jan.) 120 pp. 7¾ x 10¼. Unclassified.	Published by and *obtainable from:* U. S. Coast Guard, Washington, D. C.	Life boats, rafts, vests, first aid, seamanship, life boat equipment and survival at sea and along shore.

their fists and clubs. During the battle, a Yank slipped away to the beach and fired a signal flare which disconcerted the Japs. The Americans and Aussies then seized their guns, killed 3 Japs and wounded 1, whom they made prisoner. Fifteen other Japs were shot down while attempting to reach their canoes. When the rescue plane arrived, the camp was in a shambles. The medical officer aboard the rescue plane prepared the injured for evacuation. With all aboard, the plane taxied into deep water, but heavy equipment and 500 gallons of gasoline had to be jettisoned before the third attempt to take off was successful.

2. Another time, while covering a B-24 strike on Palau Island, the pilot of a rescue plane received a message that a life raft had been sighted 125 miles south of Palau. Four men were found aboard the raft, the other six having gone down with the ship. The engineer, a man weighing 220 pounds, had a fractured ankle, three fractured ribs, internal injuries, and was in shock. He was hoisted into the plane with great difficulty. The gunner sustained cuts about the head.

Precautions Outlined For Eating Shellfish

The Natural Museum in Balboa Park, San Diego, Calif., reports that certain clams and mussels which taste delicious may actually be deadly poisonous in the summer. The poison is due to certain microscopic organisms of the sea, known as dinoflagellates, which sometimes become so abundant in summer that they give the water a reddish appearance. These organisms are occasionally carried by currents close to the beach where they enter the digestive tract of clams and mussels. This poison, highly dangerous to man, is contained in the dark central portion of the shellfish. The safest rule is not to eat the dark meat or drink the juice from mussels, clams, or similar shellfish from the open Pacific coast between May and November (*BuMed News Letter*, Aviation Supplement, June 1945).

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Title, author, date, number pages, format	Issuing and distributing agency	Content
ADVICE TO THOSE IN LIFE BOATS AND RAFTS OF MERCHANT SHIPS. 1943 (April). Unclassified.	Published by Transport Notice No. 242, Ministry of War, Great Britain. *Obtainable from:* Foreign Liaison Section, MIS G-2, WDGS, Washington, D. C.	Life boat routine, rationing of food and water, first aid and health.
A GUIDE TO THE PRESERVATION OF LIFE AT SEA AFTER SHIPWRECK. MRC War Memorandum No. 8, 1943. 21 pp. 6¼ x 9¾. Restricted.	Published by Medical Research Council, Committee on the Care of Shipwrecked Personnel (Great Britain). Published by H. M.'s Stationary Office, York House, Kingsway, London, England. *Obtainable from:* Foreign Liaison Section, MIS G-2, WDGS, Washington, D. C.	Habits and precautions to be observed aboard ship, abandon ship procedure, water and food rations, first aid.
OCEAN SURVIVAL 1943. Unclassified.	Published by Flight Control Command, Winston-Salem, N. C. (Superseded by Item A-11).	General instructions for life raft survival.
LIFE RAFT INSTRUCTIONS. n. d. 30 pp. 4½ x 6. Unclassified.	Published by and *obtainable from:* Transcontinental and Western Airlines, Inc., Kansas City, Mo.	How to navigate rubber life rafts. Especially complete chapters on use of stills and obtaining water.
THE RAFT BOOK—Lore of the Sea and Sky Gatty, Harold. 1943. 150 pp. 29 Plates. Charts in cardborad pocket. $2.50. Unclassified.	Privately printed. *Obtainable from:* George Grady Press, 445 W. 41st St., New York, N. Y.	Detailed directions for navigation in the Pacific by stars and use of winds, currents. Especial attention to marine signs, such as birds, seaweed, water color, and clouds.
[SHARKS] ADTIC Bulletin 4. 1944 (July). 4 pp. 12 illus. Map. 5½ x 8½. Unclassified.	*Obtainable from:* ADT Branch, AAF Center, Orlando, Fla.	Kind of sharks, their habits, and protective measures.
[SHARK SENSE] NAVAER 00-80Q-14 OPIVAV 33-6, 1944 (Mar.) 22 pp. Illus. Unclassified.	*Obtainable from:* Aviation Training Division, Office of Chief of Naval Operations, U. S. Navy, Washington, D. C.	Popular account, with humorous cartoons, of sharks, the superstitions about them, and common sense protective measures.
[POISONOUS AND DANGEROUS FISHES] ADTIC Bulletin 11. 1944 (5 Feb.) 8 pp. 14 illus. 7¼ x 9½ Unclassified.	*Obtainable from:* ADT Branch, AAF Center, Orlando, Fla.	Descriptions of poisonous and harmful fish and how to protect against them. Also hints on fishing and care of edible fish.
INSTRUCTION BOOK FOR OPERATION AND MAINTENANCE OF RADIO SET SCR-578A T. O. 08-10-94. 1942 (27 Nov.) Restricted.	*Obtainable from:* Air Technical Service Command, Patterson Field, Fairfield, Ohio	Instructions for operating the "Gibson Girl" radio. Valuabl for instructors, personal equip ment officers.
SURVIVAL TIMES AND DRINKING WATER AVAILABLE TO CASTAWAYS. Interim Report No. 10, Rochester Unit to CMR OEM CMR 206. Siple, P. A.; Heald, W. F.; Adolph, E. F.; and Brown, A. H. 1943 (1 June). Unclassified.	CMR National Research Council, 2101 Constitution Ave., Washington, D. C.	Experimental data of interest chiefly to medical officers and personal equipment officers.
NAVIGATION "BY GUESS AND BY GOD" Pilot Chart U. A. N. P. Luyten, W. G. 1943 (Sept.) 10 pp. Mimeo. 8½ x 11. Unclassified.	Published by and *obtainable from:* Hydrographic Office, U. S. Navy, Washington, D. C.	Description of simple methods of determining one's position with improvised sights and observations of stars.
THUMBNAIL NAVIGATION. Barton, William H., Jr. 1943 (15 Dec.) Unclassified.	*Obtainable from:* Hayden Planetarium, New York 24, N. Y.	Brief navigation guide for the shipwrecked.

Proper Position of Shoulder Holster Prescribed

An unusual type of accident was reported by a flight surgeon from the fleet: a pilot injured by a .38 revolver which crushed his chest when he hit the silk.

The pilot was wearing the .38 shoulder holster over his right shoulder so that the revolver hung over his left chest. When he bailed out, the shock of the opening parachute caused the risers to crush the weapon against his third, fourth, fifth and sixth ribs, tearing them free.

To prevent it from slipping forward and causing injury, the shoulder holster should be worn beneath the armpit and held there with a strap around the chest. (*BuMed News Letter*, Aviation Supplement, 22 June 1945.)

All-out Air and Land Effort Effects Swamp Rescue

Two helicopters, a blimp, planes and land parties recently cooperated in a 2-day rescue operation in the Dismal Swamp, N. C.

An F6F crashed out of gas 20 miles from Elizabeth City. ASR planes located the pilot in swampland 2 hours later, and within a few minutes after the report an ASR helicopter from Elizabeth City, carrying a doctor, hovered over the spot. The nearest suitable landing spot was three-quarters of a mile from the pilot and after landing, the intervening swamp land was found impenetrable. The helicopter was unable to take off with the passenger aboard, and the doctor remained aground while the helicopter took off to try another landing closer to the scene. In taking off branches damaged the rotors so that severe vibration set in and made further search or flight back to base impossible before repairs were made. The helicopter landed on the road near the waiting ambulance, and the pilot reported that the survivor was in good condition. Sufficient repairs were made there for a return to base.

Two land parties formed with civilian guides and military personnel entered the swamp that night. High winds and rain prevented them from finding the downed pilot, although the

(Next page)

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Title, author, date, number pages, format	Issuing and distributing agency	Content
A CASTAWAY'S DIARY. Air Operations Memorandum No. 12–43 United States Pacific Fleet, Air Force, Pacific Fleet 1943 (1 July) Unclassified.	Published by and *obtainable from:* Air fleet, U. S. Navy, Presidio of San Francisco, Calif.	Log of survival at sea.
SHARKS AND THEIR BEHAVIOR. Springer, Stewart. 1943 (20 Oct.) 31 pp. maps. 8 x 10½. Unclassified.	Published by Coordinator of Research and Development, U. S. Navy, Washington, D. C. *Obtainable from:* Air Sea Rescue Agency, 1516 14th St. NW., Washington, D. C.	Accounts of attacks on man with reference to eight genera of sharks and surface water temperature above 66° F.
SEA SQUATTERS' ALMANAC. Hints on How to Live on a Life Raft. 1943. 4 pp. 8½ x 11. Unclassified.	Published by and *obtainable from:* Sea Squatters' Club, Walter Kidde and Co., Belleville, N. J.	Advice based on experience of those who have lived on life rafts. Daily routine precautions, games and prayers.
F. Air-Sea Rescue		
DUNKING SENSE 1943. Unclassified.	Published by and *obtainable from:* Training Division, Bureau of Aeronautics, U. S. Navy, Washington, D. C.	Ditching instructions.
DINGHY! DINGHY! PREPARE FOR DITCHING! For the Commanding Officer, 396th Bombardment Group H, AAB, Drew Field, Fla. Arlen, Capt. Donald L. 1944 (15 June). 47 pp. Illus. 7⅞ x 10¼. Unclassified.	Reproduced by Duplicating Dept., Supervisor of Maintenance, MacDill Field Florida. *Obtainable from:* 396th Bombardment Group H. AAB, Drew Field. Fla.	Ditching and life raft instructions.
JUST IN CASE. n. d. 10 pp. 4¾ x 6¾. Unclassified.	Published by and *obtainable from:* AAF Air Transport Command; Washington, D. C.	Brief notes on ditching and life raft operation.
AIR/SEA RESCUE. 1944 (April). 67 pp. Illus. 5¼ x 8. Restricted.	Published by and *obtainable from:* Air Sea Rescue Unit, Strategic Bombardment Division, Combat Operations Dept., AAF School, AFCTR, Orlando, Fla.	Ditching practice and preparations. Signaling, life raft routine; first aid; case histories of ditching incidents.
AIR/SEA RESCUE. n. d. 82 pp. 4½ x 6. Restricted.	Published by and *obtainable from:* Bombardment Dept., Academic Division, AAF School, AFCTR, Orlando, Fla.	Ditching, liferaft procedure and living off uninhabited islands.
PRACTICES AND PROCEDURES OF AIR/SEA RESCUE. 1943 (9 Dec.) 98 pp. Illus. 7⅛ x 10¼. Restricted.	Published by and *obtainable from:* Synthetic Devices Section, Strategic Bombardment Division, Combat Operations Department, AAF School, AFCTR, Orlando, Fla.	Complete ditching instructions for each type aircraft, with chapter on British Air/Sea Rescue organization and equipment.
WHAT WOULD YOU HAVE DONE? n. d. 55 pp. Mimeo. 8 x 10½. Restricted.	Published by and *obtainable from:* Air/Sea Rescue Unit, Strategic Bombardment Division, Combat Operations Department, AAF School, AFCTR, Orlando, Fla.	Ditching instructions, with case histories.
DITCHING GEN. n.d. 22 pp. 7¾ x 9¾. Unclassified.	Published by RCAF, AFP 30. *Obtainable from:* RCAF Headquarters, Ottawa, Canada.	Ditching and life-raft procedures illustrated by humorous cartoons.
DITCHING DOPE AAF. Manual No. 5. 1944 (1 April). 16 pp. Illus. 5⅝ x 7¾. Unclassified.	Published by and *obtainable from:* Training Aids Division, 1 Park Ave., New York, N. Y.	Adapted from RCAF "Ditching Gen." Describes ditching, drills, abandoning ship, liferaft procedures.

Note.—The listings above represent but a few references to the subjects of ditching and ocean survival. An extensive literature exists on these subjects alone, and it is impracticable to indicate more than a few titles in a bibliography of this type.

Swamp Rescue (cont'd)

doctor was located and taken back to base.

The survivor, who had suffered only minor injuries, spent the night in his raft since dense undergrowth prevented recovery of the land crash kit dropped 50 yards away.

Next morning a civilian guide was flown over the area to familiarize him with position of pilot, before he lead a land party to the scene. It took 4 hours to penetrate 8 miles of swamp. A blimp vectored the party from the air, and a second helicopter with an RAF pilot flew over area to give aid if needed.

Twenty-five hours after the crash all parties were back at the base with the rescued airmen. The deputy commander of the rescue task unit commented, "If the hydraulic hoist for the helicopter developed at CGAS Brooklyn had been available it is believed that this pilot could have been quickly rescued" by the first helicopter which located the scene within 2 hours.

FALSE EMERGENCY IFF REPORTS

MAYDAY in Action, the semimonthly digest of search and rescue activities, prepared by the Rescue and Defense Division, Fourth Air Force, reports that during the month of February, the heaviest month in search and rescue history, more than 85 percent of Emergency IFF warnings were false. Every Emergency IFF signal is treated as the real thing. Thus the addled pilot who pulls the safety wire on the switch of his Emergency IFF when there is no emergency is cluttering up communications with signals that interfere with the rescue of someone in real distress.

DRINKING SEA WATER

Men cast adrift on the open sea often succumb to the temptation to drink sea water. Next to exposure to cold, drinking sea water is probably the most common cause of death under such conditions. Although there are many differences among the symptoms exhibited by men who have consumed large amounts of sea water, disturbances of the nervous system generally predominate. (*BuMed News Letter.*)

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Emergency Entry Into Aircraft For Rescue Operations

Rescuing personnel from planes that have crash landed is a difficult and dangerous undertaking when, as the result of the crash, normal passages and emergency exits are made impassable, or the emergency release mechanisms are made inoperative. Forced entry into aircraft by cutting or otherwise demolishing the fuselage may, if not properly accomplished, cause unnecessary injury to occupants of the aircraft and to rescue personnel outside.

In February of this year the subcommittee on Standardization, Joint Aircraft Committee, the adoption of a standard Army-Navy-British policy for the identification of escape hatches and for marking the areas which would afford the safest and most rapid ingress into aircraft by forced entry when normal passages and emergency exists could not be used. At that time the subcommittee submitted recommendations to the working committee of the Aeronautical Board with a request that it prepare and issue the necessary Army-Navy joint specification, to be used as the standard document for describing the procedure to be followed in accomplishing such marking. Such a joint specification has been prepared and is now in the process of coordination by the various services.

On 31 May 1945, the AAF issued Technical Order No. 01-1-212. This TO revises the color of the marking to conform with the policy approved by the committee and supersedes an order of the same number dated 15 December 1944. It prescribes the procedure in marking areas suitable for emergency entry into aircraft for rescue operations.

Primary passages such as doors, hatches, and inclosures may be forced open by prying with a crowbar or similar tool, if jammed. No attempt should be made to shatter any glass panels in such passages.

Secondary passages, such as auxiliary exits, windows, and navigator's domes are usually of a smaller size than the primary passages and consequently entry or exit is more difficult. When the structure immediately surrounding such passages is free from heavy members such as bulkheads and main longitudinal members, and from oxygen, fuel and oil lines, or battery leads, such areas are to be indicated in the approved manner.

The free area that can be cut to enlarge the passage should be marked on the outside of the fuselage at the extreme boundary of such areas with a broken orange-yellow colored band approximately ½ inch in width. Each segment of the broken band is to be approximately one inch in length, with the segments approximately 12 inches apart. Examples of such passage are shown in figure 1. In orange-yellow colored letters (Lacquer—Spec. No. AN-TT-L-51) approximately 1 inch in height, on the inside of, parallel with, and immediately adjacent to each broken band identifying a secondary passage will be painted or stencilled: "CUT HERE FOR EMERGENCY RESCUE."

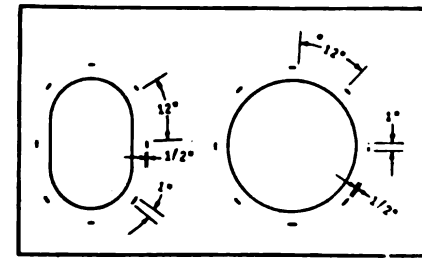


Figure 1.—Dimensions and specifications for marking free area around secondary passages for purposes of enlarging in emergency. Left, auxiliary door; right, navigator's dome.

Other areas in the fuselage structure which may be cut through to provide a means of rescue when entrance or exit cannot be readily made by the use of either a primary or secondary passage, should be determined by inspection of each affected aircraft and properly marked. This inspection must be *visual* since relocation and reinstallation of equipment, furnishings, oxygen, fuel and oil lines, and battery leads may have been made which would not be indicated on the installation drawings for the aircraft. The Technical Order cautions that the cutting of fuel, oil, or hydraulic lines or electrical wiring under crash conditions may result in fire, explosion, or increased severity of an existing fire. Such possibilities must be taken into consideration when emergency escape areas are being chosen for identification marking.

These emergency entry areas should be as close as possible to the normal stations of crew members in combat aircraft, and crew members and passengers in cargo and transport type aircraft, except where personal injury to occupants might result from forced entry at that point. Rescue personnel should determine, if possible, that all injured occupants are clear before forcing such an entrance into one of these areas, which are to be shown by corner markings as shown in figure 2. In indicating these areas the horizontal and vertical bars of the corner markings are to be ap-

(*continued on page 39*)

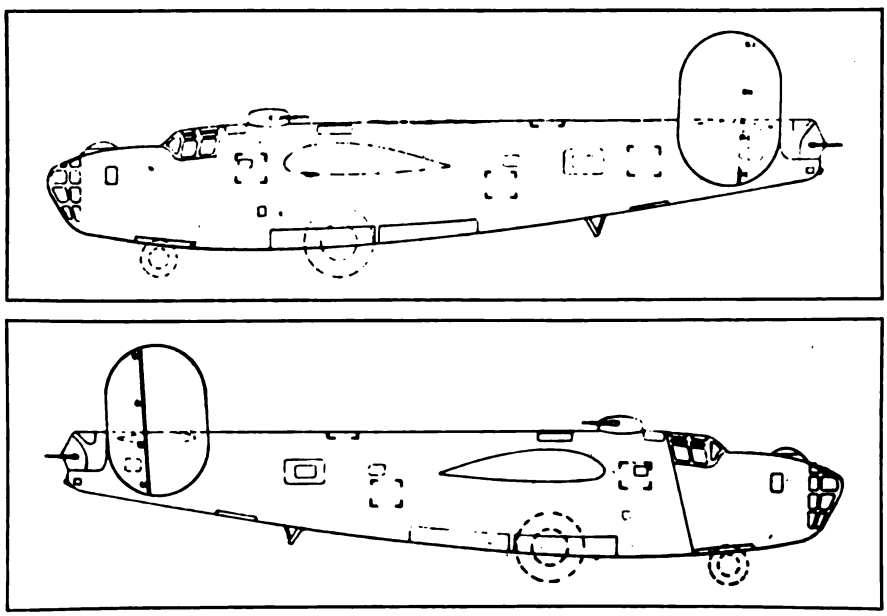


Figure 2.—Possible location of entry points in B-24, showing method of marking. Above: Left side of fuselage. Below: Right side of fuselage.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

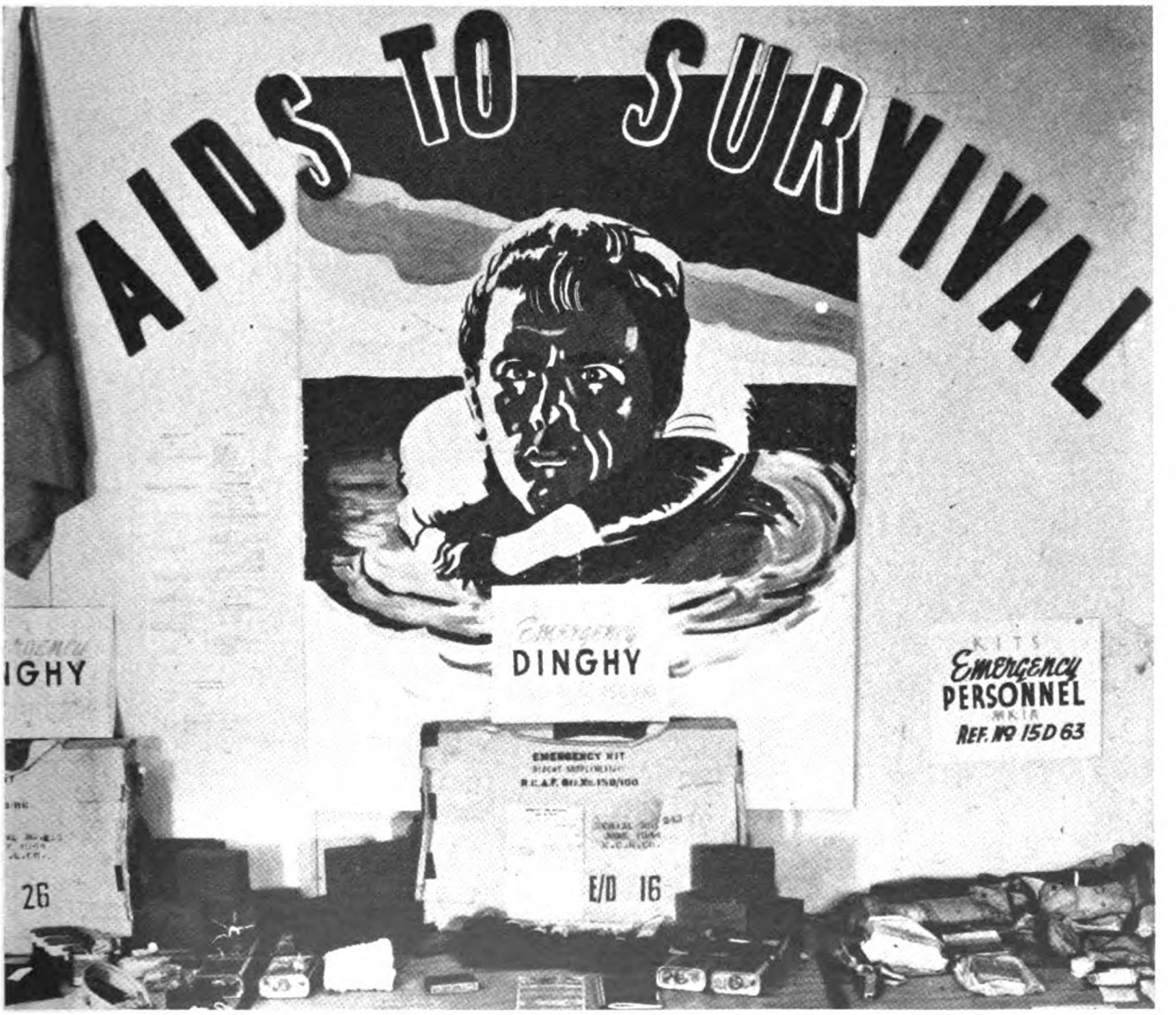
RCAF Displays Emergency Equipment

Eastern Air Command Establishes Functional Exhibits in Seven Bases

On this and the next six pages appear photographs of Royal Canadian Air Force Emergency Equipment Display rooms, with representative illustrations from each of the seven stations of that service within its command in which these display rooms have been established.

Display rooms are designated to serve a double purpose: as instructional rooms for air crews, in which are displayed all ancillary emergency equipment, mounted and sectioned where necessary, and as storerooms where land and sea droppable gear is maintained ready for immediate use, which also will provide storage for all land search equipment.

Included in the group are illustrations from the Emergency Equipment Display rooms of Scoudouc and Moncton, New Brunswick; Yarmouth, Sydney and Torbay, Nova Scotia; Goose Bay, Labrador, and Gander, Newfoundland.

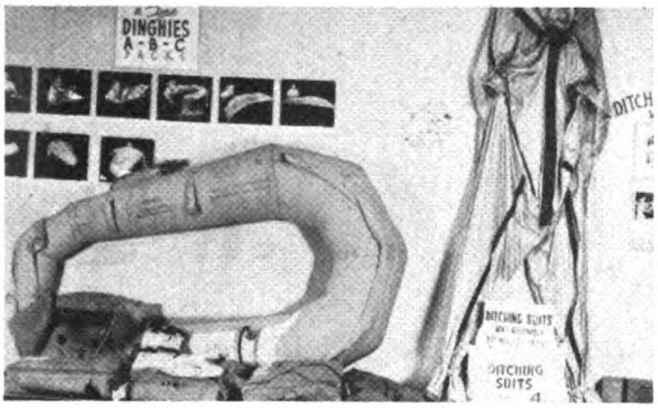


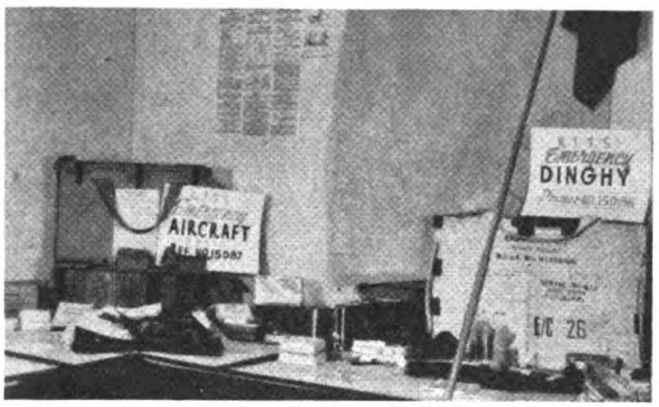
SIDNEY

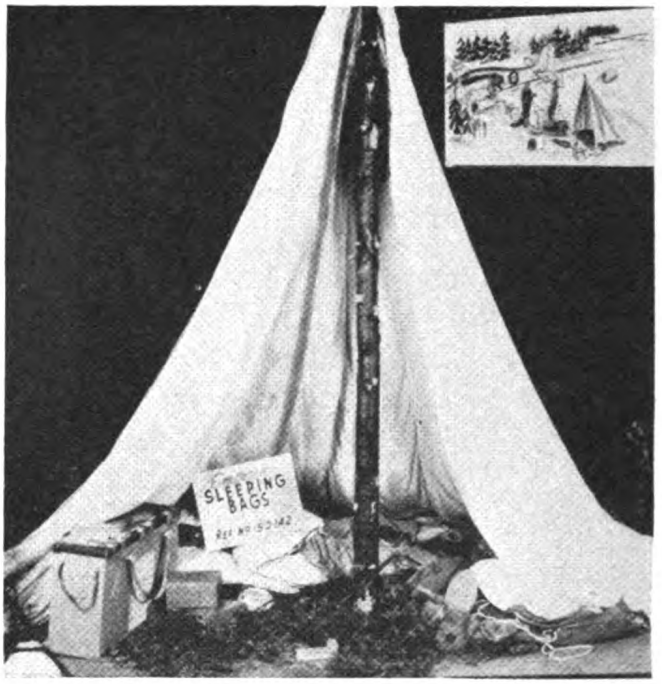
Arresting attention in the emergency display room is this poster flanked by emergency kits which are broken down for demonstration and familiarization purposes.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

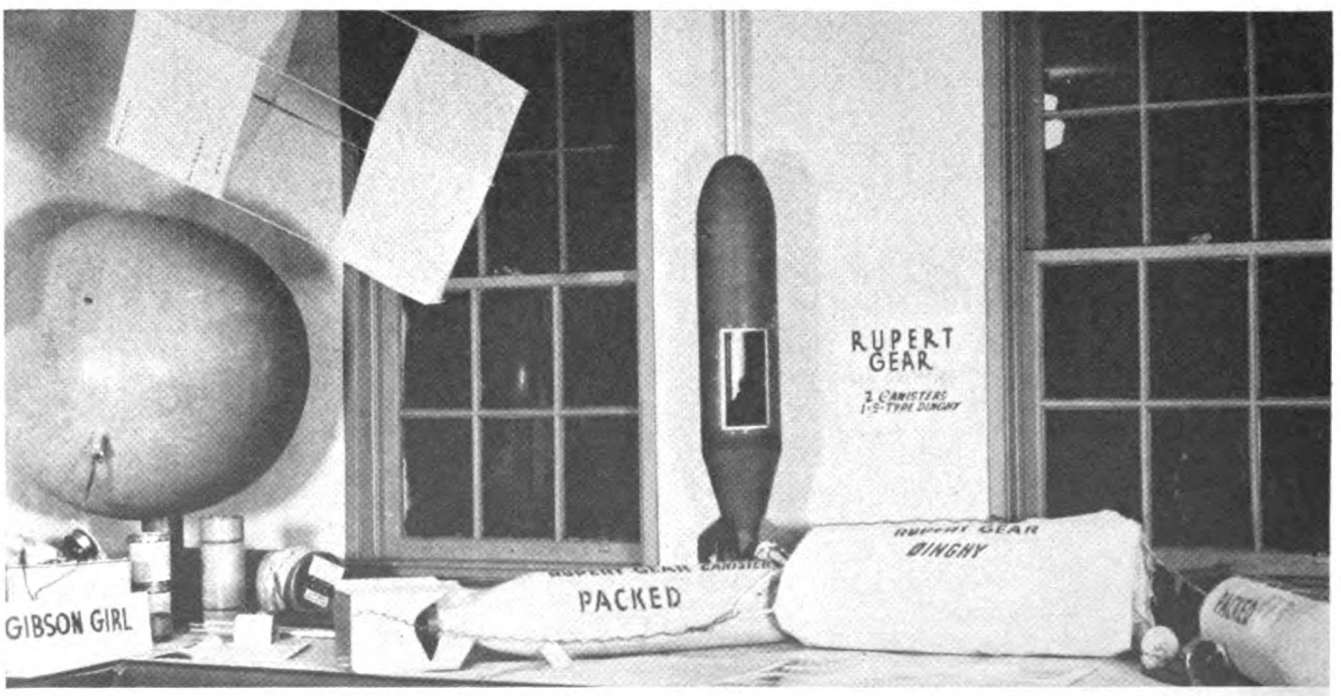
SIDNEY







Above. Tent made from parachute.
Upper left. Ditching suit on right; inflated K dinghy in center; series of photographs on the wall depict the correct procedure for inflating and boarding this type of dinghy.
Left. This corner of the exhibit displays emergency kits and their contents.



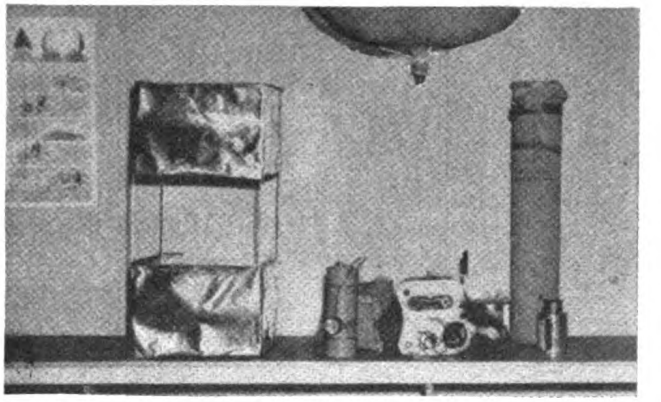
The Gibson Girl is shown on the left; on the right are the three component parts of the Rupert gear. The bomb on the left of the assembly contains emergency equipment; the cylinder in the center contains the dinghy, and on the right is a second bomb containing emergency equipment. Rupert gear is dropped in train from a Canso or Catalina in a manner similar to that of the Lindholme rescue gear or the U. S. Navy AR–10 assembly. A Rupert gear bomb container with the hatch open to show how it may be filled with emergency supplies stands against the wall.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

GANDER





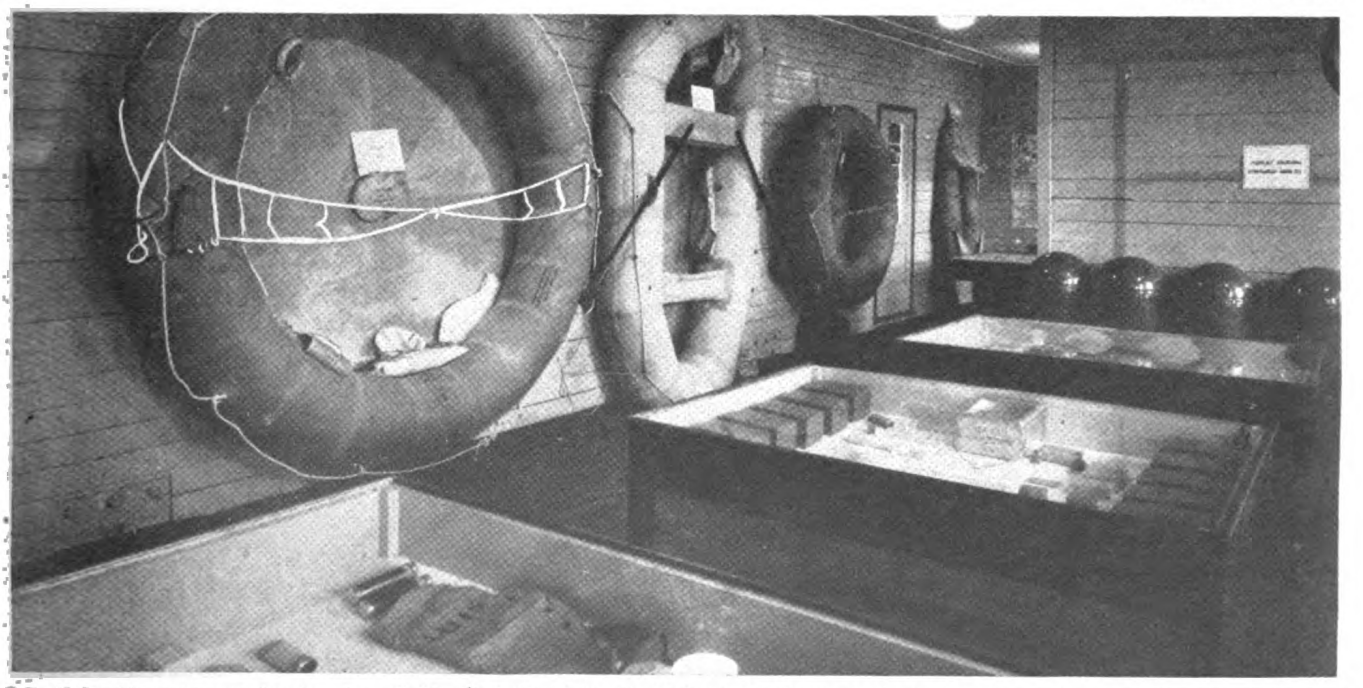


Above. Rescue equipment pool. A ground search party reports immediately to this room for equipment when a land search is initiated.

Upper right. Clothing for each member of the ground search party is piled separately. Food supplies are located on the upper shelf.

Right. Gander display of the emergency dinghy transmitter.

YARMOUTH

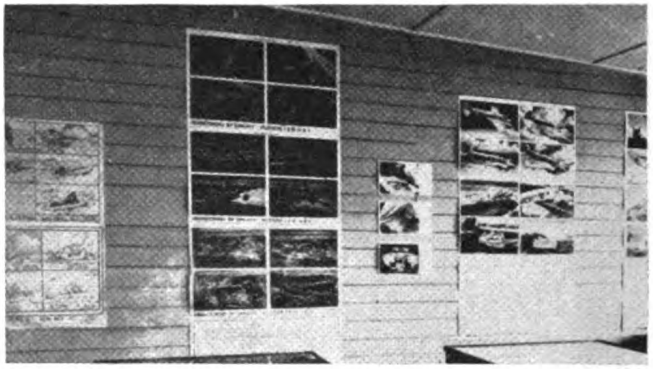


Inflated dinghies are mounted against the wall; kits are broken down for display under glass; note the four canisters at the rear right, percussion caps of the standard supplies dropping apparatus, Mark 5B, for dropping over land.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

YARMOUTH



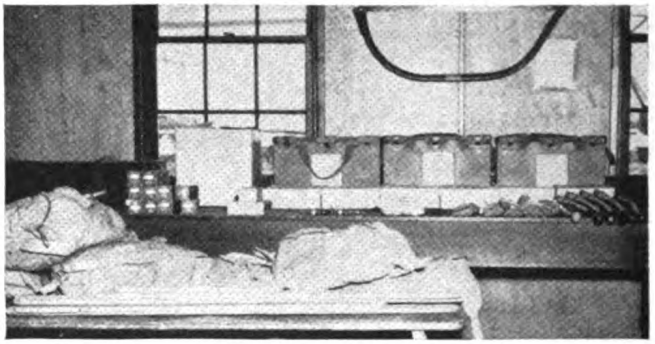


Left. Dinghy primary kit broken down for lecture and display purposes.
Right. Wall posters show how to board an inflated pneumatic boat, and teach the methods of abandoning by dinghy various types of planes.

SCOUDOUC



Land search equipment pool. Note lanterns, blankets, snowshoes, thermos bottles.



Another view of equipment pool. Swede saws, like the one on the wall, are the best medium for obtaining firewood in the bush.



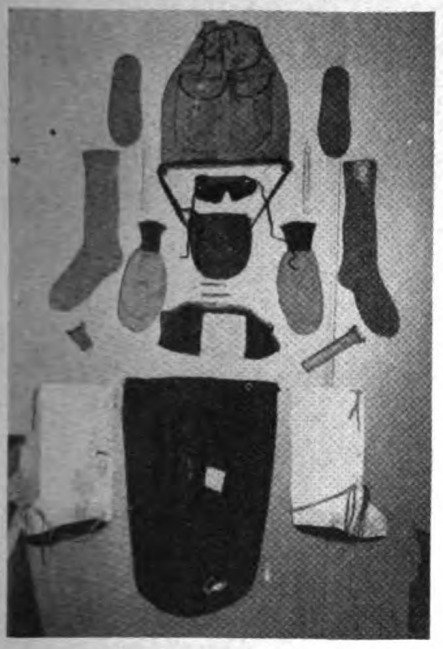
Land search equipment pools have been established in the interest of speed so that the rescue party will not be required to draw equipment from the regular equipment stores.



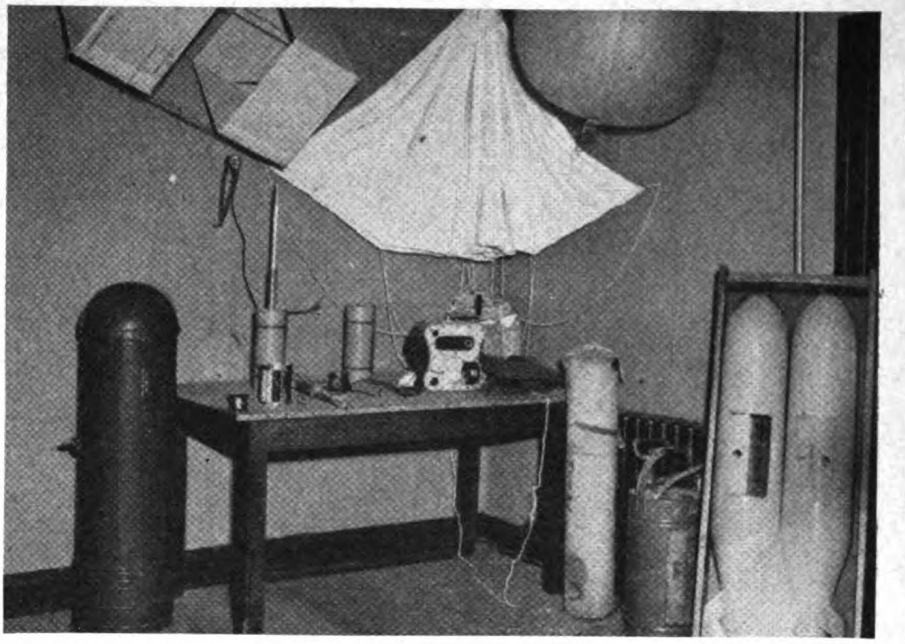
Container in foreground is standard supplies dropping apparatus, Mark 5B. Against the wall and on hangers is the clothing issued to search party.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

MONCTON

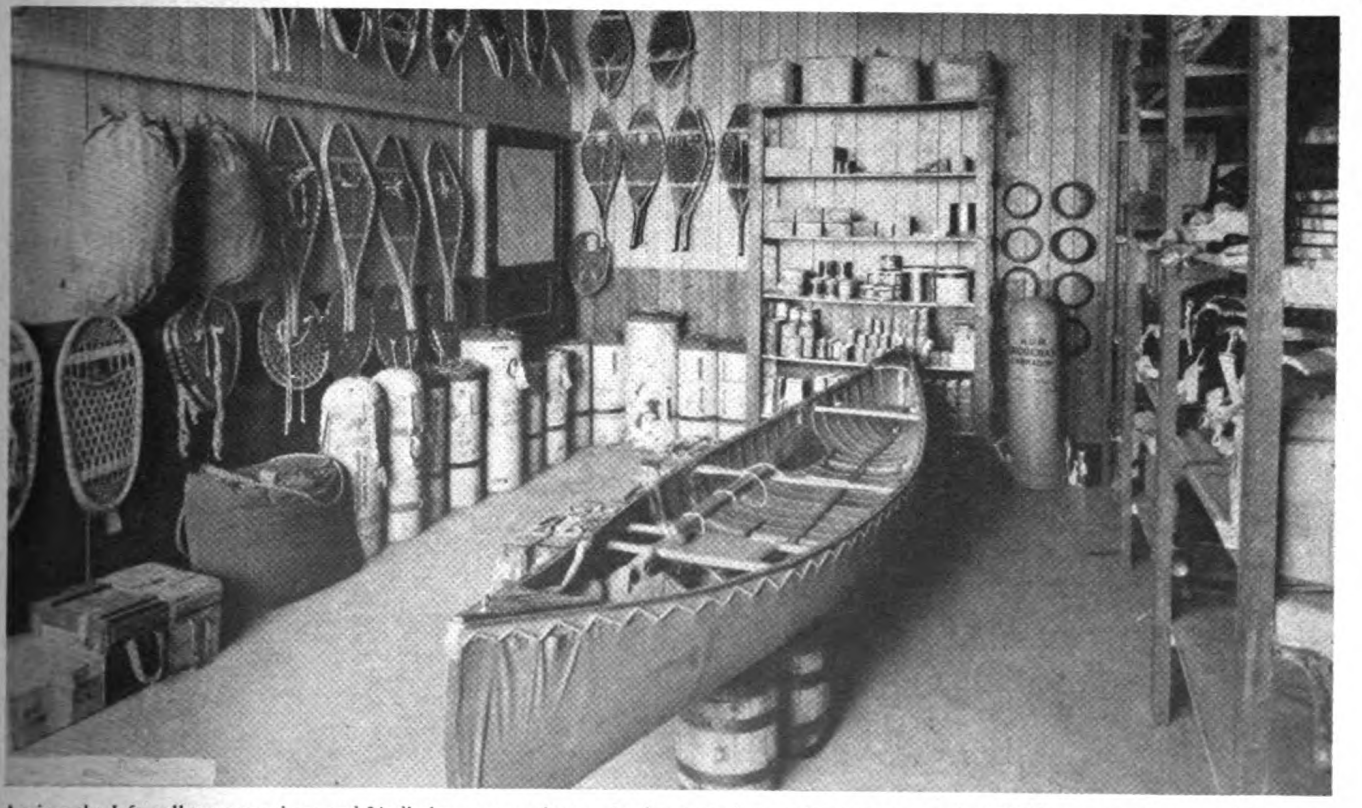


Standard kits' emergency sleeping bag broken down to show contents.



Left, standard supplies dropping apparatus, Mark 5B; center, arrangement of Gibson Girl to show component parts; right, two canisters of the Rupert gear dropping apparatus.

GOOSE BAY



Against the left wall are snowshoes and Lindholme gear canisters. In the center is a sectional canoe, standard RCAF rescue equipment, which can be broken-down into eight small sections and nested together. The entire unit can be loaded into a Norseman aircraft, carried to the scene of rescue, assembled, and used to transport equipment to the crash or to bring survivors out.

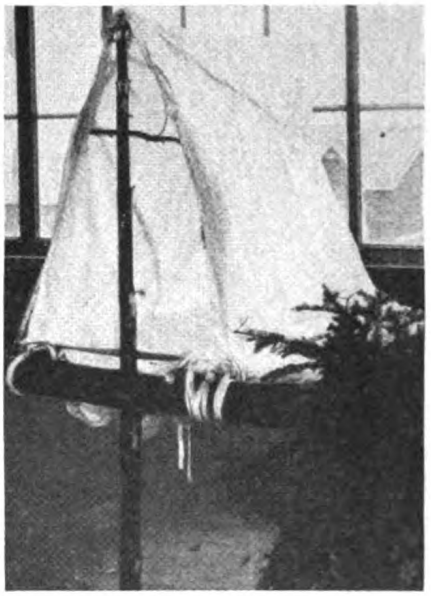
Digitized by Google
Original from UNIVERSITY OF MICHIGAN

GOOSE BAY



Emergency Personal Kit, Mark 1A, commonly known as the "bandolier kit," arranged on a panel to display contents. Kit includes signaling devices, food, medical supplies and fishing equipment.

TORBAY

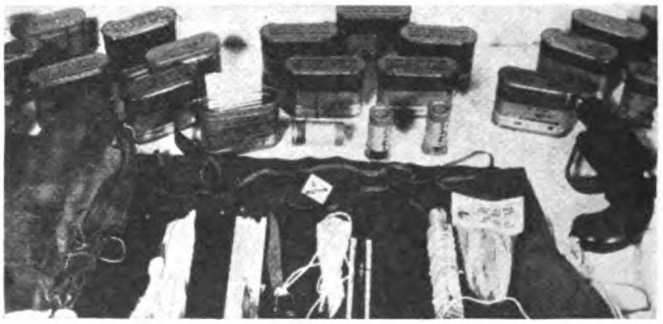


Emergency shelter using the parachute canopy, constructed several feet off the ground as protection against insects, dampness and animals.

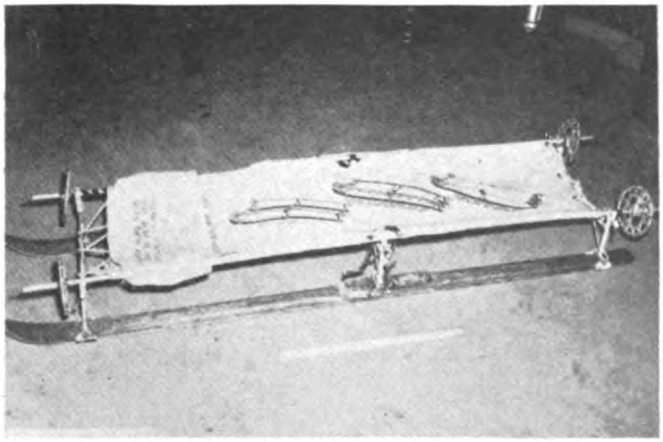
TORBAY



U. S. 10-in-1 ration broken down to show contents. Used at this station by ground search parties



Contents of the emergency dinghy primary kit are arranged under glass. Torbay has numerous kit displays similarly exhibited.



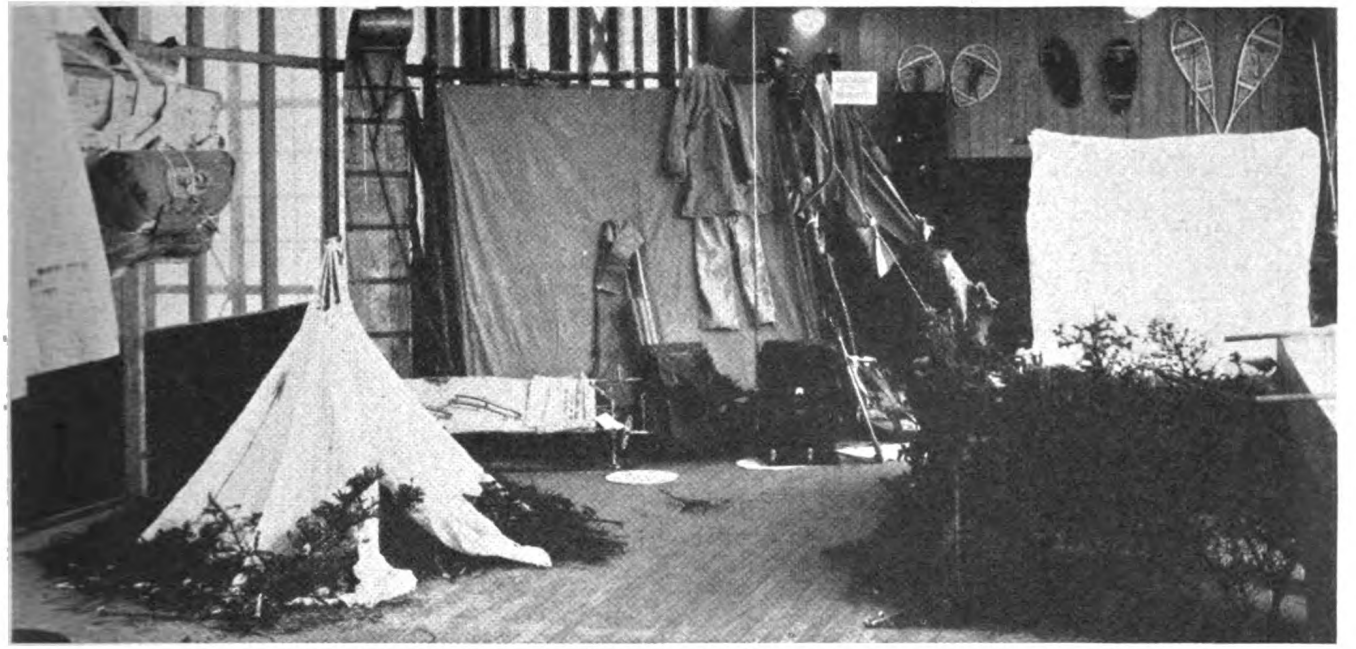
Emergency sled constructed from skis and ski poles. Instructions for assembling are printed on the canvas stretched between the poles.



Two types of shelter: RCAF emergency tent on the left, parachute shelter covered with boughs on the right.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

TORBAY



Composite view of emergency shelters. Shown on the left and right are shelters constructed from the parachute. In the center is the emergency tent. Note the toboggan standing next to the tent and the emergency sled at its base. Supplementary gear also is displayed.

Marine Survival Training *(continued from page 21)*

FOURTH DAY (continued)

Time	Subject	Activity
1300 to 1700	MARY FOSTER GARDENS (HONOLULU).	Talk: walk through gardens to see various trees and shurbs. (*Dr. Hudson.*)

FIFTH DAY

0730 to 0930	CARE OF PERSONAL WEAPONS.	Complete stripping, and oiling, use of coconut oil, etc. (*Wing Ordnance Officer.*)
0930 to 1030	ORIENTATION FOR BALANCE OF COURSE.	(1) Division into groups for marches, etc.; (2) briefing on area in which students go down, where and when they are expected to land that afternoon. Compass traverse notes and a rough map will be given to show survival locations in Kipapa area. (3) Inspection of personal gear taken in addition to regular list. (*Survival Training Officer.*)
1030 to 1600	CASTAWAY AT SEA.....	With full equipment. Each castaway sets up housekeeping, starts log, puts out fishing gear, cleans weapons, etc.
1600 to Approx. 2400	NIGHT COMPASS MARCH.	To survival site, mostly via roads (approx. distance 17 miles). Each student takes full equipment except rubber raft. (*Survival Training Officer.*)

SIXTH DAY

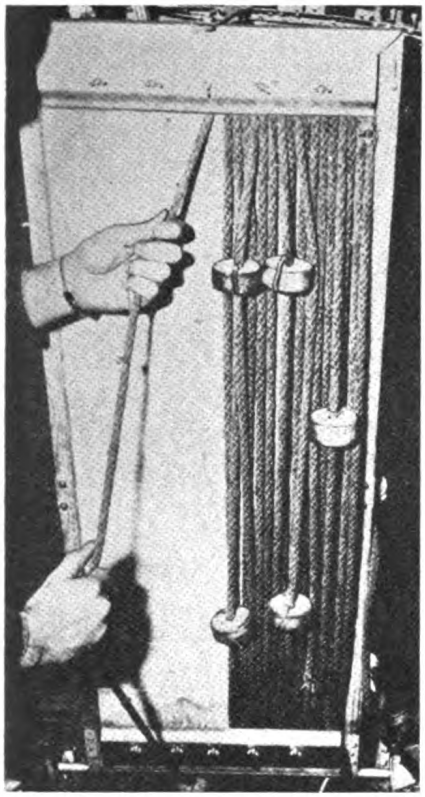
Time	Subject	Activity
0001 to 0700	BIVOUAC.....	
0700 to 1900	PREPARE CAMP.....	Will use coconut leaves as well as local shrubs in order to give practice in weaving and thatching. Collect food. (*Survival Training Officer.*)
1900 to 2100	NIGHT TRAVERSE.....	Individual. Conducted to teach stealth and direction sense and to accustom personnel to darkness. (*Survival Training Officer.*)

SEVENTH DAY

2400 to 0600	BIVOUAC.....	
0700 to 1000	DAYLIGHT COMPASS MARCH	For bananas, mountain apple, tree ferns, etc. (*Survival Training Officer.*)
1100 to 1600	RETURN TO STATION.....	With full equipment head toward the sea via lower Kipapa area. Practice between groups on moving without attracting notice in daylight. Pick up trucks in vicinity of Waipahu and return to station. (*Survival Training Officer.*)

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Air Station Devises Line Faking Board



The board in position over hatch, showing how line is paid out loop by loop. The raft is held in place on the other side of the board.

Feeling the need for some simple device to prevent floatable line attached to droppable rafts from fouling and tangling, the rescue unit at the Coast Guard Air Station, Elizabeth City, N. C., has devised a line faking board. The board, made to be used in dropping gear from PBM or PBY tunnel hatch, is 17½ by 45½ inches long. Various features and phases in operation are shown on the accompanying photographs. In addition to serving as a faking board for the line itself, it also acts as a launching board for the raft.

A faking guide is inserted through holes at each end of the board, and the line is faked down on the surface of the board by looping it over the pegs. These pegs, placed at uniform intervals, insure a smooth job, even spacing and ease in handling. When this operation is completed, the pegs are removed (see illustration below) and the line is held in place with metal clamps to which tension can be adjusted by means of thumbscrews.

The end of the line is led around the under edge of the board to the raft which is secured to the other side. It is strapped down by means of a double bight of line running through two eyebolts, one end of which is stopped by a large knot, and the other end of which is provided with a parachute rip-cord handle fastened to a wire toggle. The double bight also acts as a stopper on the retriever line, the strain of the line taking up on the knot rather than the raft itself prior to its release. When a drop is to be made the action is:

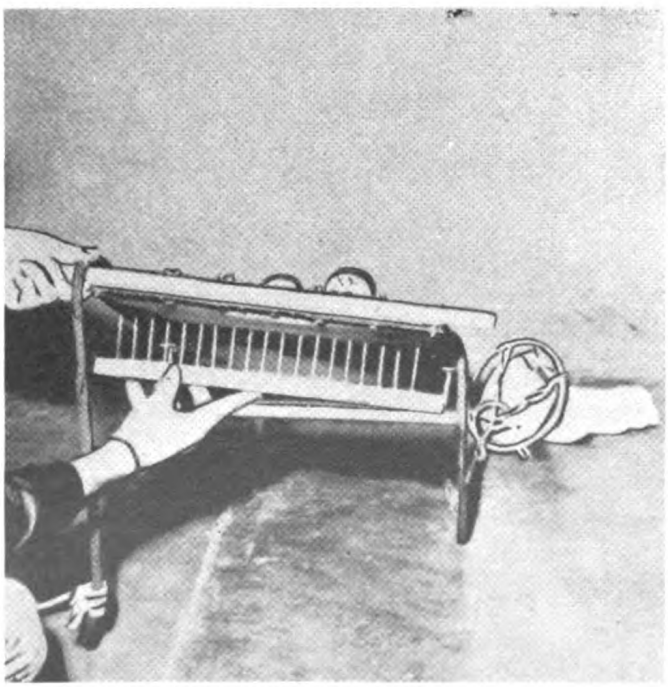
1. Upon being ordered to pay out line the man in the tunnel hatch places the board in position, partially releases the tension on the metal clamps holding the line, throws out the wind sock and allows the line to pay out one fake at a time.

2. When the line has been paid out, the tension of the wind trailing the wind sock is taken by the stopper and double-bight strap holding the raft in place.

3. When pilot is in a position to let the raft go, he gives the order over interphone. Rip cord ring is smartly withdrawn, allowing the raft to drop free.

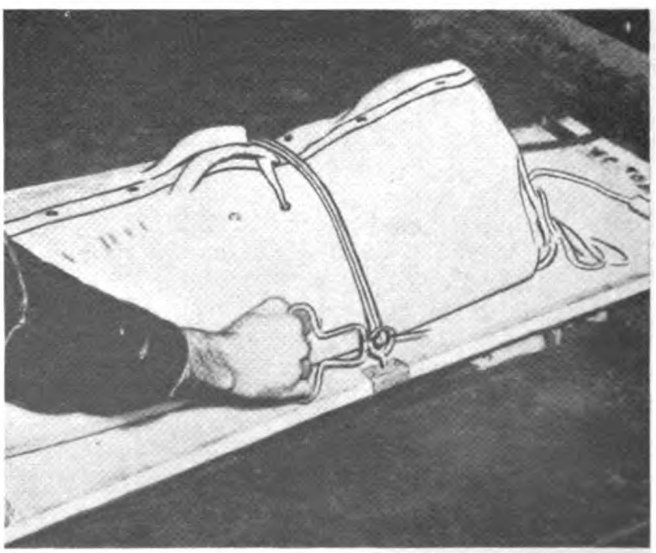
4. Raft inflates upon leaving plane—the inflation being effected by means of a static line attached to the pull ring on the CO_2 bottle.

One precaution is advised—the line must not be permitted to pay out with a run. All preliminary work is done on the ground, and a plane equipped with a board is ready as soon as it takes off.



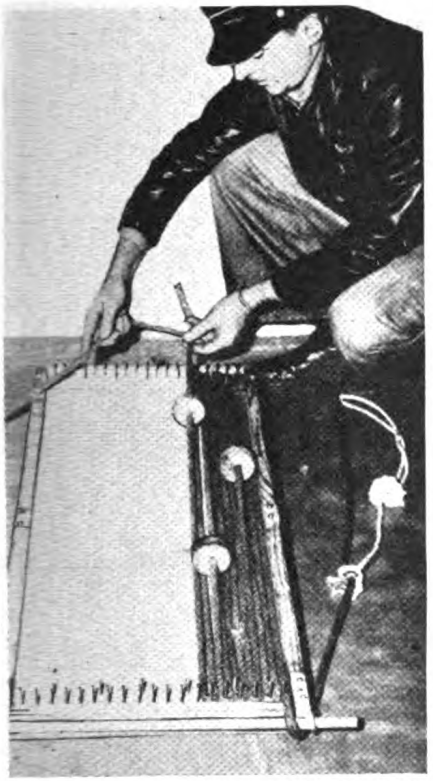
(Left:) The faking guide being removed from the board. Wind sock can be seen at right of photo, stopper at left.

(Below:) The board before installation, illustrating how raft is held in place, and method of release using rip-cord handle.



Digitized by Google

Original from UNIVERSITY OF MICHIGAN



Faking down the line over the guides. The "stopper" can be seen at the right, secured to the line. When line is all paid out, tension is taken up by the stopper instead of by the raft itself. In this way the raft may be held ready for immediate release although no strain is placed on it.

Snarls in the trail line are eliminated, as is the possibility of personnel becoming tangled in the line as it pays out. Dropping the raft is reduced to a question of pulling a rip cord, once the trail line is out. Both the rigging and operation can be done by inexperienced personnel.

Need Stressed for Considering Drift in Air-Sea Search

Need for consideration of all factors by search planes is pointed out in reports which state: "Pilot was not located for some time because search planes failed to consider current and wind drift when they arrived in the vicinity of the crash." In one case, an excellent position given to the search pilot placed him quickly over the exact spot where the downed pilot entered the water. Much time was lost in a detailed examination of this site before expanding the search, since no thought was given to the rapid drift in the area.

Air Sea Rescue Agency Adds New Exhibits

Three displays graphically presenting equipment are among those added to the Air Sea Rescue Agency's equipment exhibit. These show operational use of material and are constructed for instruction and demonstration.

DEMONSTRATION OF LEARNED TYPE SIGNALING MIRROR

While the best method of practice and instruction in the use of the "red spot" signaling mirror is to work with it outdoors in sunlight, the device described here does offer a means of effective inside demonstration.

On the back wall of the exhibit a painting of a ship and a plane provide the targets. At one side, a 300-watt reflector spot, painted black except for a portion about the size of a dime, simulates the sun. The mirror is held in the proper position by a guide which aims it at the plane, the position having been determined by the trial, but there is enough play so that the person using it can direct it toward the ship or elsewhere on the picture. The red spot is clearly visible on the target when the light is focused properly, making the demonstration highly effective.

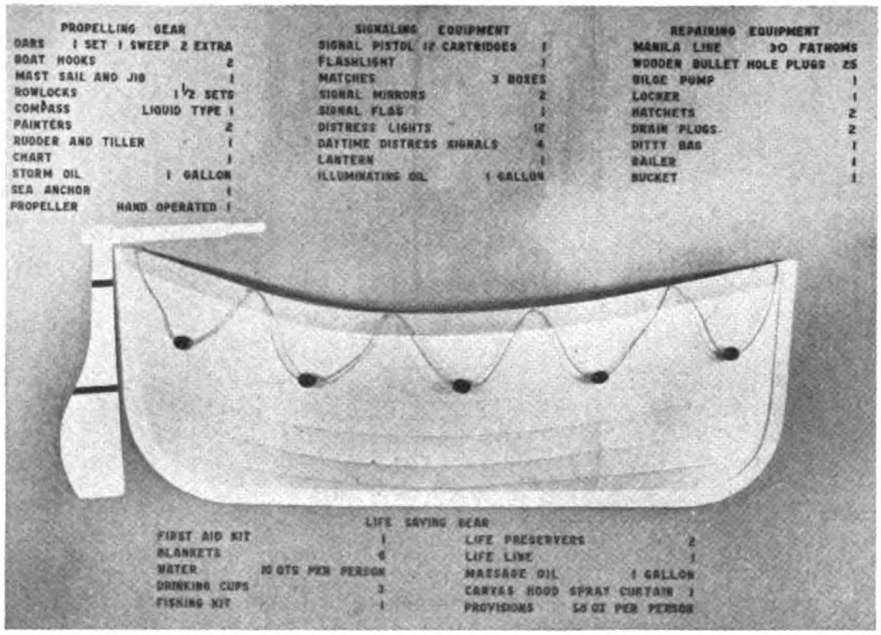
OPERATION OF SOLAR STILL

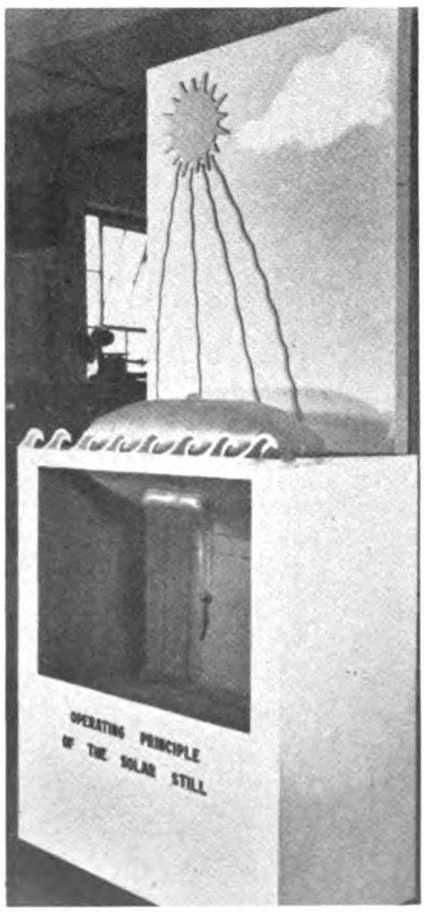
Sun, sky and a make-believe submarine view show diagramatically how the solar still works. By means of the display, an inflated still appears to be floating on the surface of the sea, with



The display in use. A light baffle has been provided at the aperture on the left of the mirror to prevent the viewer from being blinded by the source of light. A switch is located at the side of the display so the light can be turned off when the display is not in use, since light used generates considerable heat. The inset is a photo of the "targets" painted on the back wall of the display. The remainder of the inside is painted black.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN





Above: Three-dimensional lifeboat panel listing equipment included in such craft.

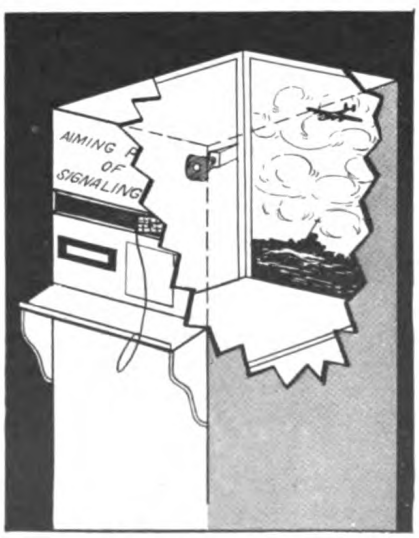
Below: The solar still display as set up in the Air Sea Rescue Agency equipment exhibit.

approximately the correct proportion of the unit viewed as if it were actually under water.

A hole of correct size and shape to hold the still in position is cut in the horizontal plane representing the surface of the water. The underwater area is painted within the three-dimensional space underneath. Use of colors gives a realistic appearance to the display, which is about 3½ feet wide and 8 feet high.

EQUIPMENT LISTED IN LIFEBOAT DISPLAY

Of importance to all those who go to sea, the equipment included in lifeboats in wartime comes to the fore with increased impact. To call attention to the wide variety of equipment and supplies included in every lifeboat, the Air Sea Rescue Agency has recently included in its exhibit a three-dimensional panel featuring a lifeboat in bold relief.



Cutaway drawing of signal mirror display.

BOOK REVIEW

RADIO DISCIPLINE SENSE

The Naval Aviation Training Division's latest "Sense" pamphlet, *Radio Discipline Sense*, discusses in the style usually used in these booklets the finer points of what to do and say when on the air. Complete with ironically humorous sketches, this 23-page booklet preaches to pilots—in no uncertain terms—the proper use of their radios.

The gist of the message is found in the first paragraph: "Your radio may have been manufactured in Oshkosh, Wisconsin, but it can be the best weapon the opposition has. So many of our own broadcasters are giving away information to the enemy; the F. B. I. should quit hunting transmitters in Mata Hari's bustle and concentrate on the TBF."

The pamphlet goes on from there to stress what not to do with your radio by recounting gruesome tales of what certain hot shot Dilberts have done previously to give communication officers gray hairs. One story is concerned with those pilots who fail to distinguish between interphone and broadcasting. A certain pilot was sent out to photograph an island held by the Japs but which held top priority on the Marines' calling list. Never quite sure about the little knobs on his transmitter, he thought he was talking to his navigator when actually he was telling the whole world as he murmured: "It sure looks peaceful down there, but wait until our Marines get in tomorrow." The island was Kwajalein.

The pamphlet continues with a plea for pilots to open up when they should and then to speak distinctly so that the information will be of some good to the listeners. Radio discipline is just that—knowing when to keep quiet or when to shout and then be intelligible. In conclusion, *Radio Discipline Sense* stresses the fact that most of the radio troubles of this war are the result of human failure to follow correct procedure.

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Emergency Entry Into Aircraft

(continued from page 28)

proximately 3 inches in length and 1 inch in width. In the approximate center of the four corner markings indicating each area the following words will be painted or stencilled in orange-yellow colored letters approximately 1 inch in height: "CUT HERE FOR EMERGENCY RESCUE."

Engineering officers are responsible for immediate removal of markings from an area which, because of changes made in service, preclude its continued use as an emergency escape area, and for the location and marking of another area more satisfactory for the purpose.

Eastern Sea Frontier Develops ASR Reporting System With Police

Third Naval District (New York area) Navy and Coast Guard authorities have developed a new reporting system which involves the cooperation of police forces of three states. Under the plan, a special air-sea rescue commercial telephone number has been assigned and the ASR operations center in New York may be called from any point along the Connecticut, New York and New Jersey coasts without cost to the police official making the call.

To direct attention to the plan, an explanatory placard has been issued to every police unit within 15 miles of the coast in the three states involved. The placard gives specific instructions to effect the most efficient communications and to give the required information. Provision is made for identification of crash location, person witnessing the accident, and the reporting agency.

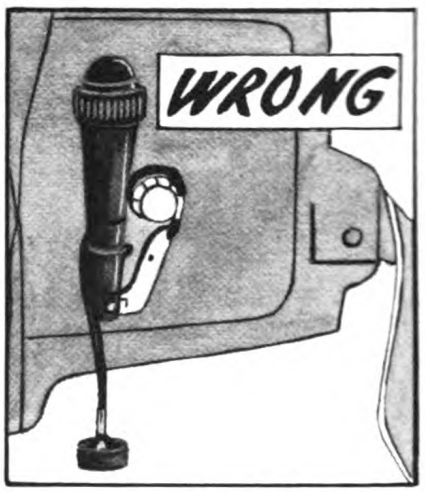
CORRECTION TO BULLETIN NO. 11

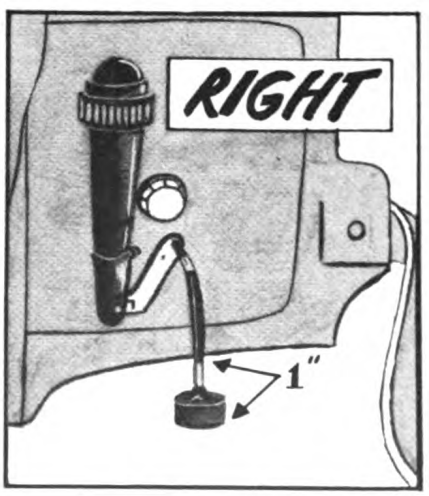
An error in make-up on page 37 caused the wrong line to be inserted in the book review, *Hitting the Silk*. The fourth line of text underneath figure 1 should be amended so that the entire paragraph will read:

> "Still another method of getting out of your cockpit in a hurry is to snap the stick forward suddenly. This will catapult you out of the plane."

Shortening of CO_2 Lanyard Illustrated

Shortening of the lanyard which operates the CO_2 actuating lever on a life vest has been directed by BuAer Technical Order No. 117–44. Lanyards on life vests already in service shall be shortened so that the distance from the





bottom of the lanyard composition button to the lower edge of the life vest is not over 1⅛ inches nor less than ⅞ inch. As issued, the lanyards were approximately 4½ inches long and personnel frequently looped them up around the cylinder mechanism. A man in the water might well forget about looping the lanyard and jerk on it without getting the desired results and decide it was faulty. See AIR SEA RESCUE BULLETIN No. 11 (May 1945), page 40. (*Naval Aviation News*, June 15.)

Life Raft Repair Bases in U. S.

Navy Aviation Circular Letter No. 27–45 established facilities for reconditioning and repairing pneumatic life rafts in the continental United States at the following points:

NAS, Quonset Point
NAS, Norfolk
NAS, Jacksonville
NAS, Miami
NAS, Pensacola
NAS, Corpus Christi
NAS, San Diego
NAS, Alameda
NAS, Seattle
NAS, Glenview

These air stations are the sole centers in the continental United States authorized to initiate procurement of reconditioning or major repair material through the ASO, Philadelphia.

Beyond the continental limits of the United States, life rafts are scheduled for reconditioning or repair in maintenance activities by cognizant fleet commands. BuAer requests that all life rafts requiring reconditioning in excess of the capacity of overhaul activities under cognizance of fleet commands be returned to the continental United States.

ATA Working To Standardize Emergency Equipment

A subcommittee of the Aircraft and Requirements committee of the Air Transport Association is working with manufacturers and the Air Sea Rescue Agency to standardize equipment to be used in operations requiring over-ocean flights. Tests are soon to be conducted on some of the rafts and other equipment now in process of development.

Such problems as pyrotechnics, rations and radio are being taken under advisement by the subcommittee in addition to those of raft design and number to be carried. In all these connections, the developments and vast experience of the Army and Navy will play an important part in adoption of standard designs. Consideration is also being given to changes and modifications in aircraft that will permit most effective use of the equipment.

Digitized by Google
- Original from UNIVERSITY OF MICHIGAN

NAVY TOs AND TNs BROUGHT UP TO DATE

Since publication of the chronological index of the Bureau of Aeronautics technical notes and orders relating to Navy air-sea rescue equipment and techniques in "Air Sea Rescue Bulletin No. 8," dated February 1945, several new technical notes and orders, listed below, have been issued.

Designation	No.	Subject	Date
Technical Note	13–45	Fishing Kit: One-Man, NavAer Specification M–627; Issue of	23 Feb. 1945
Technical Note	15–45	Life Vests—Distress Smoke Hand Signals—Attachment of Pockets for.	23 Feb. 1945
Technical Note	23–45	Kit, Sustenance, Aircraft Droppable, Type ADR–1—Description and use of.	28 Mar. 1945
Technical Note	45–45	Nylon Fabric Flight Clothing—Inflammability and Flash Resistance of.	1 June 1945
Technical Note	46–45	Pilot's Seat—Parachute Retention	1 June 1945
Technical Note	53–45	Use of Short Lap Belts with Pilot's Seat Equipment	15 June 1945
Technical Note	55–45	Painting of Insulated Jugs and Water Breakers	18 June 1945
Technical Note	56–45	Anti-Blackout Suit	19 June 1945
Technical Note	67–45	Lantern Floating—Quick Release Clamp—Attachment of	23 July 1945
Technical Order [1]	20–45	Restricted Use of AN–C–54 Natural Rubber Cements	15 Feb. 1945
Technical Order [2]	22–45	Parachute and Harness Quick Attachable Seat Type with Method of Attaching the Pararaft Kit.	26 Feb. 1945
Technical Order	24–45	Pararaft Kit, Model PK–1 and Supplementary Air-Sea Rescue Items of Personal Equipment Description, Inspection and Maintenance.	2 Mar. 1945
Technical Order [3]	25–45	Lift Vests—Inspection and Maintenance of	2 Mar. 1945
Technical Order	52–45	Web Strap Type Litter Supports—Modification for Increased Safety of.	7 June 1945
Technical Order	62–45	Multi-place Life Rafts Inflation and Deflation Hand Pumps for	9 July 1945

[1] Cancels and supersedes Technical Order 112–44.
[2] Cancels Technical Order 74–44.
[3] Cancels Technical Order 134–44.

U. S. GOVERNMENT PRINTING OFFICE: 1543

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

COMMITTEES FOR AIR SEA RESCUE

1. Committee to Study the Preparation of Emergency and Survival Publications.

(Chm)	CG:	Lt. J. H. Bell, USCGR, 1516 14th St., NW.	ADams 2003
	Army:	Maj. Thomas Dunn, AC, Room 4D 180, Pentagon Bldg.	Army 73050
	Navy:	Lt. Comdr. Norville E. White, USNR, 2W30 Bg–W, Navy Depart.	Navy 4038 or 62953

2. Committee to Study Adequacy of Air Sea Rescue Facilities.

A. (Chm)	CG:	Comdr. W. B. Scheibel USCG, 1516 14th St. NW.	ADams 2003
	Army:	Maj. T. J. Borgman, AC, Room 4D 180, Pentagon Bldg.	Army 73538 or 71629
	Alt:	Maj. William J. Small, AC, Room 4D 180, Pentagon Bldg.	Army 73538
	Navy:	Lt. C. W. Brown, USNR, Room 1634 Temporary S. Bldg., 5th and Independence, SW.	Navy 61178

3. Committee to Study the Communication Facilities and Requirements for Air Sea Rescue.

(Chm)	CG:	Capt. E. M. Webster, USCG, Room 7300, CG HQ.	Navy 4444
	Army:	Maj. J. M. Sherman, AC, Room 4D 180, Pentagon.	Army 4847
	Alt:	Maj. T. J. Borgman, AC, Room 4D 180, Pentagon Bldg.	Army 73538 or 71629
	Navy:	Comdr. C. L. Harding, USCG, 2542 Navy Depart.	Navy 63636

4. Committee to Study Special Aircraft Equipment for Rescue and Survival

(Chm)	CG:	Lt. Comdr. J. D. McCubbin, USCG, 1516 14th St. NW.	ADams 2003
	Army:	Capt. Wilfred Hines, AC, Room 4D 180, Pentagon Bldg.	Army 74687
	Alt:	Capt. Knute Flint, AC, Room 4D 180, Pentagon Bldg.	Army 73538
	Navy:	Lt. R. J. Willingham, USNR, 2W32 Bg–W Navy Depart.	Navy 62292 or 62953

5. Committee for Life Saving Equipment on Transports.

A. (Chm.)	CG:	Comdr. M. de Martino, USCG, 1516 14th St. NW.	Adams 2003.
	Army:	Major G. L. Johnson, Room 1E 668, Pentagon Bldg.	Army 72207
	Army:	Mr. Phillip E. King, 3C 738, Pentagon Bldg.	Army 4665
	Navy:	Lt. Comdr. J. L. Caillouet, Jr., USNR, Rm. 2011, Bg–T5, Navy Depart.	Navy 4575

6. Committee to Study the Medical and Physiological Aspects of Air Sea Rescue.

	CG:	Sr. Surgeon Paul A. Neal, USPHS, National Hygiene Research Lab., National Institute of Health, Bethesda, Md., Room 12.	WIscon 7000 Ext. 148
	Alt:	Surgeon J. C. Grier, USPHS Room 7220, C. G. HQ.	Navy 3283
	Army:	Capt. Charles R. Tittle, Office of Surgeon General, Room 422, 1818 H St. NW.	Army 76122
	Army:	Col. William F. Cook, Office of Air Surgeon, Room 4C 174, Pentagon Bldg.	Army 6487
	Alt:	Lt. Col. J. K. Mack, Office of Air Surgeon, Room 4C 226, Pentagon Bldg.	Army 73379
(Chm)	Navy:	Comdr. Owen W. Chenault (MC), USN, Room 2941A Navy Depart.	Navy 2732
	Alt:	Lt. Comdr. Henry A. Schroeder (MC), USNR, Room 2941A Navy Depart.	Navy 2732
	Navy:	Comdr. M. H. Goodwin, (MC), USN, Rm. 1817, Navy Depart.	Navy 5946.
	Alt:	Capt. John H. Korb (MC), USN, Room 28, Pot-Ann Bg–3.	Navy 4171
	RAF:	Wing Comdr. S.R.C. Nelson, 1424 16th St. NW.	DE 9000 Ext 94.

7. Committee to Study Ditching Procedures.
Membership of this committee is being revised.

1 May 1945

Digitized by Google
Original from UNIVERSITY OF MICHIGAN

Digitized by Google
Original from
UNIVERSITY OF MICHIGAN